APPENDICES

Appendix A: Publications

Appendix B: Case Study

Appendix C: Instrumentation

Appendix D: Samples of Experiments Data

Appendix E: Experiments' Daily Progress Repor

APPENDIX A: List of Publications

A. Puplication

ISI Index: Qahtan, A., Keumala, N., Rao, S., & Abdul-Samad, Z. (2011). Experimental determination of thermal performance of glazed-fa ades with water film, under direct solar radiation in the tropics. *Building and Environment*. (Q1, ISI)

Engineering index EI: Qahtan, A., Keumala, N., Rao, S. P., & Alashwal, A. M. (2012). A Case Study to Assess the near-Glazed Workplace Thermal Performance. Advanced Materials Research, 374, 1724-1732.

International Conference

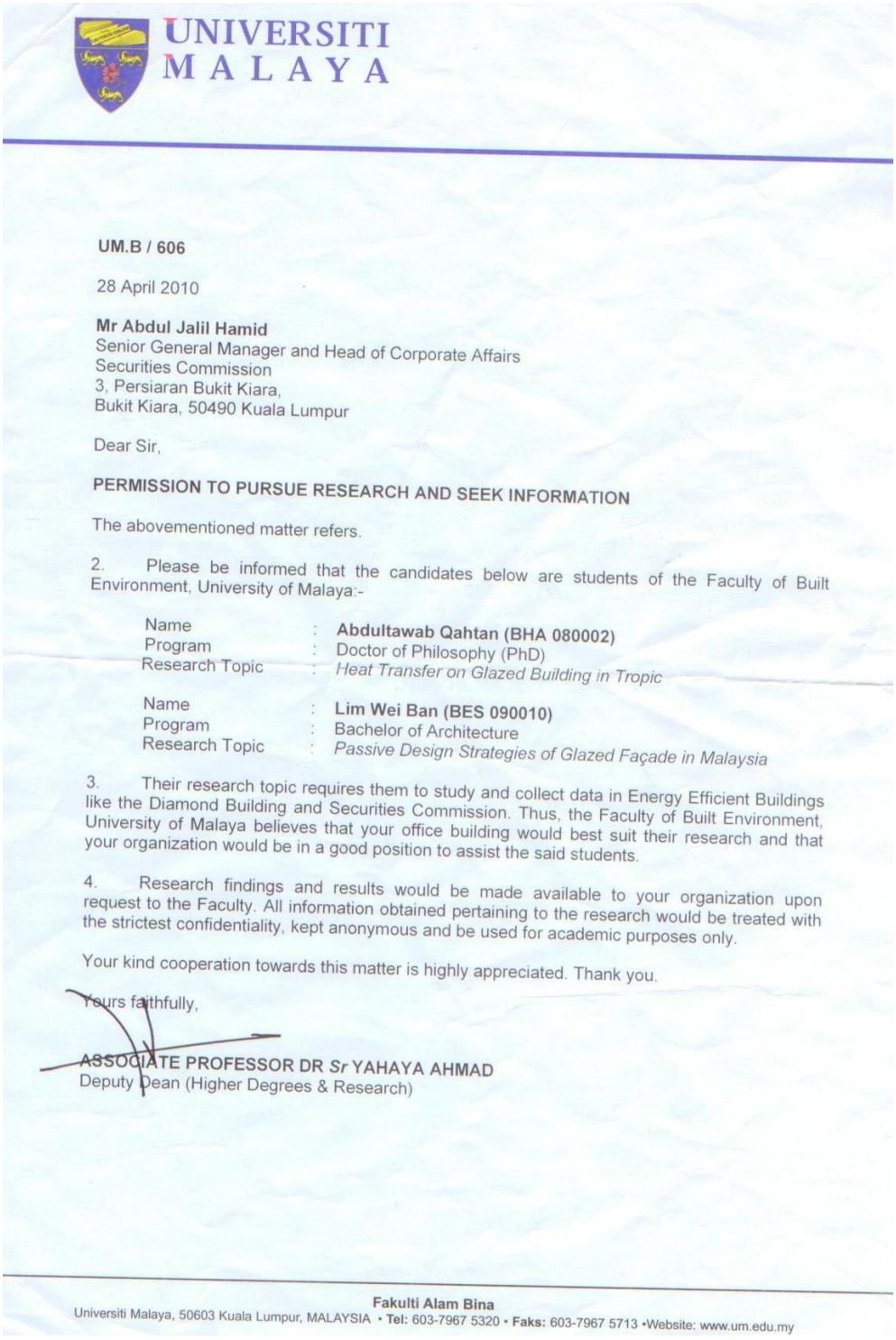
Qahtan, A., Keumala, N., Rao, S. P., & Alashwal, A. M. (2011). *A Case Study to Assess the Near-glazed Workplace Thermal performance.* Paper presented at the International Conference on Technology of Architecture and Stracture, Xi'an, China.

Qahtan, A. M., Keumala, N. I. M., & Rao, S. P. (2010). *Occupant satisfaction in respect to indoor environmental quality in energy efficient certified buildings in malaysia.* Paper presented at the 16th International Conference of the CIB W104 Open Building Implementation on "Open and Sustainable Building", Bilbao, Spain.

Qahtan, A., Keumala, N., Rao, S., & Abdul-Samad, Z. (2010). *Field Analysis of Thermal Comfort in two Energy Efficient Office Buildings in Malaysia.* Paper presented at the The Tenth International Conference for Enhanced Building Operations, Kuwait.

APPENDIX B: Cases study

B. cases study



UNIVERSITI
MALAYA

UM.B / 606

28 April 2010

Mr Abdul Jalil Hamid
Senior General Manager and Head of Corporate Affairs
Securities Commission
3, Persiaran Bukit Kiara,
Bukit Kiara, 50490 Kuala Lumpur

Dear Sir,

PERMISSION TO PURSUE RESEARCH AND SEEK INFORMATION

The abovementioned matter refers.

2. Please be informed that the candidates below are students of the Faculty of Built Environment, University of Malaya:-

Name	:	**Abdultawab Qahtan (BHA 080002)**
Program	:	Doctor of Philosophy (PhD)
Research Topic	:	*Heat Transfer on Glazed Building in Tropic*
Name	:	**Lim Wei Ban (BES 090010)**
Program	:	Bachelor of Architecture
Research Topic	:	*Passive Design Strategies of Glazed Façade in Malaysia*

3. Their research topic requires them to study and collect data in Energy Efficient Buildings like the Diamond Building and Securities Commission. Thus, the Faculty of Built Environment, University of Malaya believes that your office building would best suit their research and that your organization would be in a good position to assist the said students.

4. Research findings and results would be made available to your organization upon request to the Faculty. All information obtained pertaining to the research would be treated with the strictest confidentiality, kept anonymous and be used for academic purposes only.

Your kind cooperation towards this matter is highly appreciated. Thank you.

Yours faithfully,

ASSOCIATE PROFESSOR DR *Sr* YAHAYA AHMAD
Deputy Dean (Higher Degrees & Research)

Fakulti Alam Bina
Universiti Malaya, 50603 Kuala Lumpur, MALAYSIA • **Tel:** 603-7967 5320 • **Faks:** 603-7967 5713 •Website: www.um.edu.my

Figure B.1: Sample of the letter for collecting data

APPENDIX B: Cases study

- Building height: 20 storey
- Building type: Office
- Glass used: 10mm blue reflective float glass

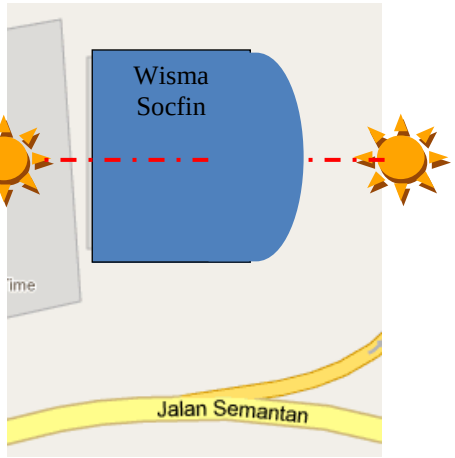


Figure B-2: Socfin building Damansara, reflective glass

APPENDIX B: Cases study

- Building height: 20 storey
- Building type: Office
- Glass used: 12mm blue tinted float glass

Figure B-3: The Horizon, UOA Bangsar South. Bangsar

- Building height: 14 storeys
- Building type: Office
- Glass used: 12mm blue tinted float glass

Figure B.4: Wisma Selangor Dredging 142c Jalan Ampang.

APPENDIX B: Cases study

SURVEY ON MID-RISE GLAZED-OFFICE-BUILDINGS IN KLANG-VALLEY

Building height: 8story

Building type: office

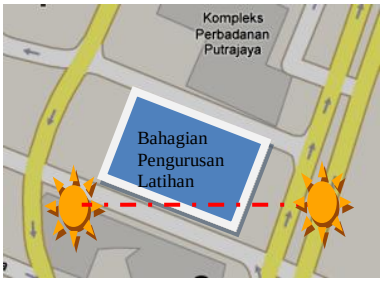


Figure B.5: Bahagian Pengurusan Latihan, KKM (Putrajaya)

Figure B.6: Stting up the Datalogger inside the building. Left: at the lift loopy. Right at the workspace.

APPENDIX B: Cases study

Figure B.7: Setting up the outdoor Datalogger on the roof of the SC Building (left). Measuring the glass surface temperature to calibrate the datalogger.

APPENDIX B: Cases study

Table B.1: Sample of data values, measuring at the SC Building, indoor and outdoor.

Time	Date	Solar radiation W/m2	west-Solar radiation W/m2	light Lux	outdoor air-temp.degC	R.H. %	indoor R.H. %	Drybulb Temp. °C	TeGLOBE TH °C	inner TeSURFACE °C - inside skin	inner TeSURFACE °C - outside skin	Air velocity m/s
7:00:00	22/6/2010	0.20	0.22	0.01	25.18	88.75	59.1	25.63	26.13	25.59	25.17	0
7:05:00	22/6/2010	0.00	0.00		25.22	87.52	58.6	25.63	26.13	25.59	25.21	0
7:10:00	22/6/2010	0.00	0.00	0.30	25.25	88.12	58.1	25.63	26.13	25.59	25.21	0
7:15:00	22/6/2010	2.65	0.00		25.26	87.81	57.8	25.63	26.13	25.63	25.25	0
7:20:00	22/6/2010	3.26	0.00	0.43	25.28	87.34	57.1	25.67	26.13	25.63	25.25	0.01
7:25:00	22/6/2010	4.89	4.12		25.30	87.21	57	25.59	26.13	25.63	25.32	0
7:30:00	22/6/2010	14.26	9.54	1.84	25.30	87.96	57	25.59	26.13	25.63	25.32	0
7:35:00	22/6/2010	26.89	14.96		25.28	87.79	56.5	25.63	26.17	25.63	25.36	0.01
7:40:00	22/6/2010	31.99	17.57	4.40	25.22	87.69	56.5	25.56	26.17	25.67	25.4	0.01
7:45:00	22/6/2010	40.54	22.77		25.16	87.72	55.8	25.67	26.17	25.67	25.44	0
7:50:00	22/6/2010	40.34	21.69	5.79	25.14	86.69	56.1	25.67	26.17	25.67	25.52	0.06
7:55:00	22/6/2010	43.39	23.21		25.16	86.22	56.2	25.59	26.13	25.67	25.56	0.02
8:00:00	22/6/2010	42.78	23.64	5.97	25.21	86.03	56.2	25.59	26.09	25.67	25.63	0.09
8:05:00	22/6/2010	46.45	22.77		25.29	85.98	56.2	25.56	26.09	25.71	25.71	0.02
8:10:00	22/6/2010	61.53	31.45	8.44	25.34	86.01	56.2	25.52	26.06	25.71	25.82	0.02
8:15:00	22/6/2010	73.34	39.04		25.39	85.58	55.9	25.52	26.06	25.71	25.94	0.02
8:20:00	22/6/2010	94.12	49.45	13.45	25.44	83.22	55.9	25.52	26.06	25.75	26.09	0.15
8:25:00	22/6/2010	119.59	65.28		25.46	82.34	55.7	25.52	26.09	25.79	26.25	0.02
8:30:00	22/6/2010	133.24	72.00	19.24	25.50	82.34	55.7	25.52	26.13	25.82	26.4	0.01
8:35:00	22/6/2010	137.72	72.87		25.62	82.22	55.7	25.52	26.13	25.86	26.6	0.06
8:40:00	22/6/2010	164.82	81.76	25.01	25.76	82.24	55.4	25.52	26.17	25.94	26.79	0.07
8:45:00	22/6/2010	261.59	114.73		25.92	81.28	55.4	25.52	26.21	25.98	27.02	0
8:50:00	22/6/2010	192.12	95.21	29.16	26.16	80.19	55.2	25.52	26.21	26.06	27.21	0.13
8:55:00	22/6/2010	182.14	93.04		26.35	80.57	55.2	25.52	26.25	26.13	27.4	0.03
9:00:00	22/6/2010	197.01	96.29	30.27	26.46	80.07	54.9	25.56	26.25	26.17	27.6	0.02
9:05:00	22/6/2010	171.95	87.62		26.47	80.69	54.7	25.56	26.25	26.25	27.64	0.02
9:10:00	22/6/2010	166.25	81.98	24.22	26.47	80.37	54.7	25.56	26.25	26.29	27.64	0.04
9:15:00	22/6/2010	161.97	80.24		26.46	80.98	54.4	25.56	26.25	26.33	27.64	0.02

APPENDIX B: Cases study

Time	Date	Solar radiation W/m2	west-Solar radiation W/m2	light Lux	outdoor air-temp.degC	R.H. %	indoor R.H. %	Drybulb Temp. °C	TeGLOBETH °C	inner TeSURFACE °C - inside skin	inner TeSURFACE °C - outside skin	Air velocity m/s
9:20:00	22/6/2010	196.40	101.28	33.94	26.46	80.41	54.4	25.56	26.25	26.4	27.75	0
9:25:00	22/6/2010	196.40	94.34		26.52	79.63	54.2	25.56	26.29	26.44	27.87	0.01
9:30:00	22/6/2010	193.75	96.51	28.20	26.62	79.41	54.2	25.56	26.29	26.48	28.02	0.01
9:35:00	22/6/2010	215.34	107.14		26.61	79.60	53.9	25.56	26.33	26.56	28.18	0.01
9:40:00	22/6/2010	227.16	113.21	33.35	26.57	80.22	53.9	25.56	26.33	26.6	28.41	0.04
9:45:00	22/6/2010	241.22	121.67		26.63	79.38	53.7	25.59	26.36	26.67	28.68	0
9:50:00	22/6/2010	256.09	127.52	37.30	26.74	78.44	53.7	25.59	26.4	26.75	28.91	0.01
9:55:00	22/6/2010	248.15	125.35		26.97	77.26	53.7	25.59	26.44	26.83	29.02	0.01
10:00:00	22/6/2010	234.90	123.83	33.53	27.13	76.82	53.5	25.63	26.48	26.9	29.14	0
10:05:00	22/6/2010	267.91	138.80		27.24	75.57	53.5	25.63	26.52	26.98	29.33	0.03
10:10:00	22/6/2010	253.03	142.49	36.01	27.28	75.72	53.5	25.63	26.56	27.06	29.53	0.04
10:15:00	22/6/2010	233.48	131.64		27.27	75.75	53.5	25.63	26.56	27.14	29.76	0.11
10:20:00	22/6/2010	227.57	128.39	31.53	27.28	75.73	53.3	25.67	26.6	27.21	29.95	0.04
10:25:00	22/6/2010	236.74	135.76		27.26	76.06	53.3	25.67	26.6	27.29	30.1	0.01
10:30:00	22/6/2010	243.26	139.45	34.09	27.30	76.36	53.3	25.67	26.63	27.37	30.26	0.01
10:35:00	22/6/2010	250.59	141.40		27.30	75.87	53.1	25.71	26.67	27.44	30.41	0.01
10:40:00	22/6/2010	250.79	139.23	35.24	27.20	77.06	53.1	25.71	26.71	27.52	30.61	0.14
10:45:00	22/6/2010	265.26	143.14		27.17	77.11	52.9	25.75	26.75	27.6	30.8	0.06
10:50:00	22/6/2010	294.39	148.34	41.84	27.18	75.27	52.9	25.75	26.79	27.67	30.92	0.02
10:55:00	22/6/2010	333.10	161.35		27.23	74.75	52.9	25.75	26.79	27.75	31.07	0.02
11:00:00	22/6/2010	385.87	180.22	55.91	27.39	73.53	52.9	25.75	26.83	27.83	31.26	0.03
11:05:00	22/6/2010	358.16	179.14		27.62	72.58	52.7	25.79	26.9	27.91	31.49	0.05
11:10:00	22/6/2010	389.13	193.67	55.89	27.72	71.75	52.5	25.82	26.94	28.02	31.8	0.03
11:15:00	22/6/2010	418.67	204.95		27.75	71.35	52.3	25.86	26.98	28.14	32.15	0
11:20:00	22/6/2010	400.54	202.13	58.54	27.92	71.25	52.5	25.82	27.02	28.25	32.38	0.03
11:25:00	22/6/2010	364.27	193.23		28.08	71.65	52.5	25.86	27.1	28.33	32.61	0.04
11:30:00	22/6/2010	396.46	204.08	56.39	28.21	70.05	53	25.86	27.1	28.45	32.85	0.07
11:35:00	22/6/2010	415.41	212.97		28.43	69.36	52.6	25.9	27.17	28.56	33.08	0.11
11:40:00	22/6/2010	412.76	217.96	58.29	28.74	68.35	52.4	25.94	27.21	28.68	33.31	0.06
11:45:00	22/6/2010	381.18	209.50		29.07	67.54	52.2	25.98	27.25	28.79	33.54	0.01
11:50:00	22/6/2010	396.67	214.71	55.3	29.16	70.2	52.2	25.98	27.29	28.87	33.69	0.03

APPENDIX B: Cases study

Time	Date	Solar radiation W/m2	west-Solar radiation W/m2	light Lux	outdoor air-temp.degC	R.H. %	indoor R.H. %	Drybulb Temp. °C	TeGLOBETH °C	inner TeSURFACE °C - inside skin	inner TeSURFACE °C - outside skin	Air velocity m/s
				3		4						
11:55:00	22/6/2010	445.97	228.37		29.09	67.81	52	26.02	27.33	28.99	34	0.07
12:00:00	22/6/2010	385.05	213.40	53.27	29.14	66.63	52	26.06	27.37	29.1	34.2	0.02
12:05:00	22/6/2010	380.98	205.16		29.25	67.13	52	26.06	27.37	29.18	34.31	0.01
12:10:00	22/6/2010	384.24	205.81	53.61	29.41	66.13	51.8	26.06	27.4	29.26	34.24	0.12
12:15:00	22/6/2010	361.62	205.16		29.54	64.04	51.8	26.06	27.4	29.33	34.27	0
12:20:00	22/6/2010	363.46	205.16	50.64	29.62	63.93	51.4	26.13	27.44	29.37	34.27	0.01
12:25:00	22/6/2010	409.50	221.86		29.67	63.94	51.6	26.09	27.48	29.45	34.43	0.02
12:30:00	22/6/2010	449.84	232.49	64.18	29.75	64.06	51.4	26.17	27.52	29.53	34.58	0.06
12:35:00	22/6/2010	484.27	238.78		29.91	62.11	51.4	26.17	27.56	29.6	34.85	0.01
12:40:00	22/6/2010	493.03	246.15	69.85	30.05	62.36	51.4	26.17	27.6	29.68	35.12	0.03
12:45:00	22/6/2010	516.46	255.91		30.12	61.44	51.4	26.17	27.64	29.8	35.36	0.02
12:50:00	22/6/2010	711.23	295.38	98.93	30.17	61.12	51	26.21	27.71	29.91	35.7	0.04
12:55:00	22/6/2010	616.29	286.71		30.34	60.51	51	26.21	27.79	30.03	36.05	0
13:00:00	22/6/2010	1015.60	346.78	138.78	30.62	59.49	50.8	26.29	27.83	30.14	36.52	0
13:05:00	22/6/2010	890.71	333.33		31.08	58.53	51	26.29	27.91	30.3	37.06	0
13:10:00	22/6/2010	757.07	328.35	103.39	31.63	58.19	51.3	26.29	27.98	30.49	37.44	0.02
13:15:00	22/6/2010	503.62	285.19		31.69	53.13	51.1	26.36	27.98	30.57	37.64	0.02
13:20:00	22/6/2010	479.58	275.43	66.86	31.67	54.61	51	26.44	28.02	30.72	37.79	0.01
13:25:00	22/6/2010	439.04	258.95		31.74	50.77	51.2	26.44	28.02	30.8	37.83	0.01
13:30:00	22/6/2010	417.04	246.37	57.96	31.87	49.11	51.3	26.48	28.06	30.88	37.68	0.01
13:35:00	22/6/2010	398.70	238.34		32.07	52.11	51.3	26.52	28.1	30.99	37.56	0.01
13:40:00	22/6/2010	392.18	234.66	54.51	32.09	52.33	51.3	26.56	28.1	31.03	37.6	0.01
13:45:00	22/6/2010	371.61	229.02		32.06	53.29	51.3	26.56	28.14	31.11	37.56	0.02
13:50:00	22/6/2010	361.01	230.97	49.76	32.03	54.88	51.1	26.6	28.18	31.15	37.64	0.01
13:55:00	22/6/2010	379.14	237.91		32.10	54.24	51.4	26.6	28.21	31.22	37.75	0.04
14:00:00	22/6/2010	411.13	255.91	56.44	32.15	53.42	51.2	26.63	28.25	31.26	37.87	0.01
14:05:00	22/6/2010	395.65	244.63		32.15	52.98	51.2	26.67	28.29	31.3	37.91	0.01
14:10:00	22/6/2010	363.05	222.73	50.00	32.17	51.44	51	26.71	28.29	31.34	37.75	0.01
14:15:00	22/6/2010	328.42	204.08		32.11	51.73	51.2	26.67	28.25	31.34	37.6	0.01
14:20:00	22/6/2010	315.99	194.10	43.68	32.17	50.77	51	26.67	28.25	31.34	37.33	0

APPENDIX B: Cases study

Time	Date	Solar radiation W/m2	west-Solar radiation W/m2	light Lux	outdoor air-temp.degC	R.H. %	indoor R.H. %	Drybulb Temp. °C	TeGLOBETH °C	inner TeSURFACE °C - inside skin	inner TeSURFACE °C - outside skin	Air velocity m/s
14:25:00	22/6/2010	322.10	193.02		32.21	50.17	50.8	26.71	28.25	31.3	37.13	0.03
14:30:00	22/6/2010	306.62	184.99	42.15	32.16	50.62	50.6	26.75	28.21	31.26	36.94	0.01
14:35:00	22/6/2010	317.82	191.28		32.15	50.16	50.4	26.75	28.21	31.26	36.86	0.01
14:40:00	22/6/2010	331.88	207.11	45.49	32.13	50.63	50.5	26.71	28.21	31.22	36.9	0.01
14:45:00	22/6/2010	400.13	248.54		32.06	51.67	50.5	26.71	28.25	31.22	37.06	0.04
14:50:00	22/6/2010	370.38	231.62	50.64	31.96	52.38	50.3	26.71	28.21	31.19	36.9	0.02
14:55:00	22/6/2010	325.77	208.85		31.87	51.57	50.3	26.71	28.21	31.15	36.71	0
15:00:00	22/6/2010	296.23	168.29	41.30	31.82	50.67	50.3	26.71	28.14	31.07	36.36	0.03
15:05:00	22/6/2010	254.46	141.62		31.66	47.56	50.3	26.67	28.1	30.99	35.7	0.06
15:10:00	22/6/2010	248.76	141.18	34.98	31.36	49.28	50.3	26.67	28.06	30.92	35.12	0.01
15:15:00	22/6/2010	244.89	142.70		30.99	49.44	50.1	26.71	28.06	30.8	34.66	0.08
15:20:00	22/6/2010	230.22	139.23	32.24	30.74	50.53	50	26.67	28.02	30.68	34.43	0.01
15:25:00	22/6/2010	235.92	137.93		30.49	52.56	50.2	26.63	27.98	30.57	34.12	0.04
15:30:00	22/6/2010	210.45	124.49	29.59	30.24	53.09	50	26.63	27.94	30.45	33.69	0
15:35:00	22/6/2010	185.60	116.89		30.02	51.32	50.4	26.56	27.94	30.34	33.35	0.01
15:40:00	22/6/2010	193.55	121.67	27.03	29.89	50.63	50.2	26.6	27.91	30.22	33.15	0.01
15:45:00	22/6/2010	201.29	126.00		29.80	53.17	50	26.6	27.91	30.14	33.08	0
15:50:00	22/6/2010	217.79	132.94	30.18	29.80	53.37	50.1	26.56	27.91	30.07	33.12	0.06
15:55:00	22/6/2010	255.07	148.12		29.85	54.43	50.1	26.56	27.91	29.99	33.31	0.01
16:00:00	22/6/2010	267.50	156.80	36.84	29.92	53.76	50.1	26.52	27.91	29.95	33.46	0.01
16:05:00	22/6/2010	275.45	163.09		30.01	54.69	50.1	26.52	27.91	29.91	33.73	0.03
16:10:00	22/6/2010	264.85	166.99	36.38	30.10	53.89	50.3	26.48	27.91	29.91	33.85	0.07
16:15:00	22/6/2010	222.27	147.04		30.10	54.33	50.1	26.48	27.91	29.91	33.77	0.02
16:20:00	22/6/2010	208.82	139.88	28.89	30.07	56.15	50.1	26.48	27.91	29.87	33.77	0
16:25:00	22/6/2010	201.69	138.58		30.09	57.04	49.8	26.48	27.87	29.83	33.77	0.06
16:30:00	22/6/2010	202.10	140.75	28.00	29.99	59.42	49.8	26.48	27.87	29.83	33.69	0.03
16:35:00	22/6/2010	215.34	147.04		29.89	58.43	49.8	26.44	27.87	29.83	33.69	0.01
16:40:00	22/6/2010	212.08	147.26	29.31	29.82	58.93	49.5	26.44	27.87	29.83	33.66	0
16:45:00	22/6/2010	204.75	147.47		29.73	59.53	49.7	26.4	27.83	29.8	33.69	0.01
16:50:00	22/6/2010	195.99	142.92	27.03	29.69	56.56	49.5	26.44	27.83	29.8	33.66	0.01
16:55:00	22/6/2010	190.90	145.31		29.71	57.0	49.7	26.4	27.83	29.8	33.66	0.02

APPENDIX B: Cases study

Time	Date	Solar radiation W/m2	west-Solar radiation W/m2	light Lux	outdoor air-temp.degC	R.H. %	indoor R.H. %	Drybulb Temp. °C	TeGLOBETH °C	inner TeSURFACE °C - inside skin	inner TeSURFACE °C - outside skin	Air velocity m/s
						5						
17:00:00	22/6/2010	180.10	144.00	25.18	29.72	56.43	49.5	26.44	27.83	29.76	33.66	0
17:05:00	22/6/2010	170.32	134.90		29.76	56.91	49.5	26.44	27.79	29.76	33.62	0
17:10:00	22/6/2010	161.97	134.46	22.79	29.75	57.33	49.9	26.36	27.75	29.76	33.54	0.03
17:15:00	22/6/2010	157.89	146.17		29.69	57.06	49.9	26.36	27.75	29.8	33.66	0.1
17:20:00	22/6/2010	188.45	239.65	25.90	29.62	59.59	49.9	26.36	27.91	29.83	34.16	0.04
17:25:00	22/6/2010	118.57	121.67		29.54	60.88	49.7	26.4	27.87	29.76	33.89	0.01
17:30:00	22/6/2010	108.79	102.58	15.73	29.42	61.11	49.7	26.4	27.75	29.72	33.46	0.04
17:35:00	22/6/2010	109.20	95.21		29.29	61.61	50.8	26.33	27.71	29.68	33.12	0.01
17:40:00	22/6/2010	112.26	97.16	15.96	29.22	62.57	51.2	26.4	27.71	29.64	32.92	0
17:45:00	22/6/2010	106.35	93.47		29.18	63.28	52.1	26.36	27.75	29.56	32.77	0.02
17:50:00	22/6/2010	99.83	90.87	14.31	29.15	64.01	52.1	26.4	27.75	29.53	32.61	0.01
17:55:00	22/6/2010	95.35	87.62		29.13	63.73	52.4	26.44	27.75	29.49	32.46	0
18:00:00	22/6/2010	93.92	86.97	13.38	29.09	64.95	52.6	26.36	27.71	29.41	32.3	0
18:05:00	22/6/2010	91.88	84.58		29.09	66.01	53.3	26.33	27.71	29.37	32.15	0.03
18:10:00	22/6/2010	89.44	87.18	12.39	29.08	66.49	52.7	26.48	27.67	29.29	32.15	0
18:15:00	22/6/2010	87.60	90.87		29.07	66.26	53.8	26.36	27.71	29.26	32.11	0.02
18:20:00	22/6/2010	82.51	83.50	11.18	29.07	65.33	52.9	26.48	27.67	29.22	32.03	0
18:25:00	22/6/2010	77.01	78.94		29.07	64.85	54	26.36	27.67	29.18	31.88	0.03
18:30:00	22/6/2010	65.60	67.66	8.76	29.05	64.00	53.8	26.36	27.64	29.1	31.65	0
18:35:00	22/6/2010	52.77	52.48		29.06	63.98	54	26.36	27.56	29.02	31.38	0.04
18:40:00	22/6/2010	39.52	39.90	5.27	29.04	64.43	54.1	26.4	27.52	28.91	31.03	0.03
18:45:00	22/6/2010	27.91	26.68		28.96	65.49	54.9	26.25	27.44	28.83	30.64	0.03
18:50:00	22/6/2010	20.78	19.52	2.81	28.90	65.58	54.7	26.33	27.4	28.72	30.3	0.01
18:55:00	22/6/2010	15.69	14.10		28.84	66.25	54.7	26.33	27.37	28.6	29.99	0
19:00:00	22/6/2010	13.85	11.49	1.92	28.78	64.95	54.9	26.29	27.29	28.48	29.72	0
19:05:00	22/6/2010	12.63	9.54		28.73	66.28	55	26.4	27.29	28.37	29.41	0
19:10:00	22/6/2010	10.19	8.02	1.30	28.69	69.35	56.1	26.44	27.25	28.25	29.14	0
19:15:00	22/6/2010	7.13	5.86		28.63	68.99	57	26.4	27.25	28.18	28.91	0.01
19:20:00	22/6/2010	4.07	3.69	0.52	28.55	69.45	57.7	26.33	27.21	28.06	28.68	0.01
19:25:00	22/6/2010	0.00	0.00		28.42	69.07	58.6	26.25	27.17	27.98	28.48	0.03

APPENDIX B: Cases study

Time	Date	Solar radiation W/m2	west-Solar radiation W/m2	light Lux	outdoor air-temp.degC	R.H. %	indoor R.H. %	Drybulb Temp. °C	TeGLOBETH °C	inner TeSURFACE °C - inside skin	inner TeSURFACE °C - outside skin	Air velocity m/s
19:30:00	22/6/2010	0.00	0.00	0.01	28.31	68.45	58.1	26.25	27.14	27.87	28.33	0
19:35:00	22/6/2010	0.00	0.00		28.26	68.85	58.1	26.25	27.1	27.75	28.18	0
19:40:00	22/6/2010	0.00	0.00	0.00	28.23	68.32	58.6	26.25	27.06	27.67	28.06	0.03
19:45:00	22/6/2010	0.41	0.43		28.18	68.11	58.9	26.25	27.02	27.6	27.94	0.02
19:50:00	22/6/2010	0.41	0.65	0.01	28.15	67.71	59.1	26.25	27.02	27.52	27.79	0.01
19:55:00	22/6/2010	0.00	0.00		28.12	66.67	59.6	26.21	26.98	27.44	27.67	0
20:00:00	22/6/2010	0.20	0.00	0.00	28.08	66.80	59.6	26.21	26.94	27.37	27.6	0
20:05:00	22/6/2010	0.00	0.22		28.04	68.06	59.8	26.17	26.94	27.33	27.48	0.01
20:10:00	22/6/2010	0.00	0.00	0.01	27.95	68.85	60.1	26.17	26.9	27.25	27.37	0.02
20:15:00	22/6/2010	0.00	0.22		27.89	65.08	60.1	26.17	26.87	27.17	27.29	0.03
20:20:00	22/6/2010	0.00	0.00	0.01	27.95	62.88	60.1	26.17	26.87	27.14	27.21	0.03
20:25:00	22/6/2010	0.00	0.00		28.10	62.38	60.3	26.13	26.83	27.06	27.14	0.01
20:30:00	22/6/2010	0.00	0.00	0.00	28.22	62.62	60.5	26.13	26.83	27.02	27.06	0.02
20:35:00	22/6/2010	0.00	0.00		28.30	63.09	60.8	26.09	26.79	26.98	26.98	0.02
20:40:00	22/6/2010	0.00	0.00	0.00	28.29	63.97	60.8	26.09	26.79	26.9	26.9	0.02
20:45:00	22/6/2010	0.20	0.22		28.21	64.54	61	26.09	26.75	26.87	26.87	0.02
20:50:00	22/6/2010	0.20	0.22	0.00	28.16	63.73	61.2	26.06	26.75	26.83	26.79	0.02
20:55:00	22/6/2010	0.00	0.22		28.13	68.32	61.2	26.06	26.71	26.79	26.71	0
21:00:00	22/6/2010	0.00	0.00	0.00	28.00	70.41	61.2	26.06	26.71	26.75	26.63	0
21:05:00	22/6/2010	0.00	0.00		27.83	68.86	61.2	26.06	26.67	26.71	26.6	0
21:10:00	22/6/2010	0.20	0.00	0.01	27.69	69.68	61.5	26.02	26.67	26.67	26.56	0.02
21:15:00	22/6/2010	0.20	0.22		27.62	66.79	61.5	26.02	26.63	26.63	26.52	0.02
21:20:00	22/6/2010	0.20	0.22	0.00	27.62	66.89	61.5	26.02	26.63	26.6	26.44	0.02
21:25:00	22/6/2010	0.20	0.43		27.63	66.79	61.7	25.98	26.63	26.56	26.4	0.01
21:30:00	22/6/2010	0.20	0.22	0.00	27.60	70.15	61.7	25.98	26.6	26.52	26.33	0.04
21:35:00	22/6/2010	0.00	0.00		27.49	70.95	61.7	25.98	26.6	26.48	26.25	0.02
21:40:00	22/6/2010	0.00	0.00	0.01	27.36	71.96	61.7	25.98	26.56	26.44	26.17	0.04
21:45:00	22/6/2010	0.00	0.00		27.25	72.60	61.9	25.94	26.56	26.4	26.13	0.02
21:50:00	22/6/2010	0.00	0.00	0.00	27.13	73.57	61.7	25.94	26.56	26.4	26.09	0.02
21:55:00	22/6/2010	0.00	0.00		27.03	73.87	61.9	25.94	26.52	26.36	26.09	0.04
22:00:00	22/6/2010	0.00	0.00	0.00	26.95	74.2	61.9	25.9	26.52	26.33	26.02	0.04

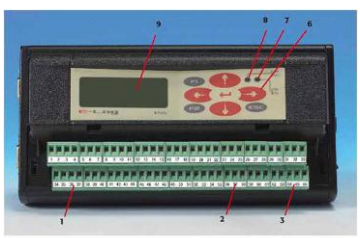
APPENDIX B: Cases study

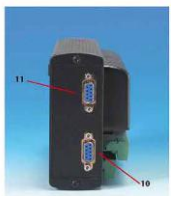
Time	Date	Solar radiation W/m2	west-Solar radiation W/m2	light Lux	outdoor air-temp.degC	R.H. %	indoor R.H. %	Drybulb Temp. °C	TeGLOBETH °C	inner TeSURFACE °C - inside skin	inner TeSURFACE °C - outside skin	Air velocity m/s
						6						
22:05:00	22/6/2010	0.00	0.00		26.88	74.57	61.9	25.9	26.48	26.29	25.98	0.02
22:10:00	22/6/2010	0.00	0.00	0.00	26.80	75.87	61.9	25.9	26.48	26.25	25.94	0
22:15:00	22/6/2010	0.00	0.00		26.71	76.26	61.9	25.9	26.48	26.25	25.86	0
22:20:00	22/6/2010	0.00	0.00	0.00	26.64	77.35	61.9	25.9	26.44	26.21	25.82	0
22:25:00	22/6/2010	0.00	0.00		26.56	77.44	62.1	25.86	26.44	26.17	25.75	0.01
22:30:00	22/6/2010	0.00	0.00	0.00	26.47	78.06	62.1	25.86	26.44	26.13	25.67	0.03
22:35:00	22/6/2010	0.00	0.00		26.40	79.33	62.1	25.86	26.4	26.09	25.63	0.02
22:40:00	22/6/2010	0.00	0.00	0.00	26.32	79.62	62.1	25.86	26.4	26.09	25.63	0.03
22:45:00	22/6/2010	0.00	0.00		26.27	80.57	62.1	25.86	26.4	26.06	25.56	0.03
22:50:00	22/6/2010	0.00	0.00	0.00	26.25	81.17	62.1	25.82	26.36	26.02	25.52	0.02
22:55:00	22/6/2010	0.00	0.00		26.20	80.72	62.1	25.82	26.36	26.02	25.48	0
23:00:00	22/6/2010	0.00	0.00	0.00	26.14	82.14	62.1	25.82	26.36	25.98	25.44	0.02
23:05:00	22/6/2010	0.00	0.00		26.05	82.69	62.1	25.82	26.33	25.94	25.36	0.01
23:10:00	22/6/2010	0.00	0.00	0.00	26.02	82.75	62.3	25.79	26.33	25.94	25.32	0
23:15:00	22/6/2010	0.00	0.00		26.04	82.83	62.3	25.79	26.33	25.9	25.29	0.01
23:20:00	22/6/2010	0.00	0.00	0.00	26.03	82.83	62.3	25.79	26.29	25.86	25.29	0
23:25:00	22/6/2010	0.00	0.00		26.02	82.81	62.3	25.79	26.29	25.86	25.29	0.03
23:30:00	22/6/2010	0.00	0.00	0.01	26.02	82.22	62.3	25.79	26.29	25.82	25.32	0.03
23:35:00	22/6/2010	0.00	0.00		26.02	82.31	62.5	25.75	26.29	25.82	25.29	0.01
23:40:00	22/6/2010	0.20	0.00	0.00	26.05	82.34	62.5	25.75	26.25	25.79	25.29	0
23:45:00	22/6/2010	0.00	0.00		26.11	82.38	62.5	25.75	26.25	25.79	25.29	0.01
23:50:00	22/6/2010	0.00	0.00	0.00	26.12	82.23	62.3	25.75	26.25	25.79	25.25	0.01
23:55:00	22/6/2010	0.00	0.00		26.12	80.74	62.3	25.75	26.25	25.75	25.21	0.01

APPENDIX C: INSTRUMENTATIONS

C. Instrumintations

1. BABUC For indoor environment and Weather station for outdoor environment measurements





CERTIFICATO DI COLLAUDO
TEST REPORT

Acquisitore dati / *Data Logger* — **Modello:** / *Model* E-Log (ELO310) — **Matricola:** / *Serial nr.* 09110783

Procedura di collaudo / *Test procedure* PCP076

Procedura di fabbricazione / *Manufacturing procedure* PCF222

1. **Ispezione visiva** / ***Visual inspection***

Part	Descrizione / Description	Check	Data	Esecutore Tester
1.1	*Controllare la congruenza delle indicazioni della targhetta con il documento guida del codice relativo*	✓	26/11/09	

2. **Verifica funzionale** / ***Operative test***

Part	Descrizione / Description	Check	Data	Esecutore Tester
2.1	*Programmare il rilievo per avere una durata di memorizzazione di 48 ore.* *Verificare la presenza di tutte le elaborazioni configurate.*	✓	26/11/09	
2.2	*Controllare che la differenza fra i valori di minima e massima non sia superiore alla tolleranza dichiarata:* *Temperatura: ±0,1°C* *Umidità: ±0,2%* *Pressione: ±0,2 hPa* *Direzione: ±1°* *Radiazione: ±3W* *Velocità: ±0,1m/s*	✓	26/11/09	
2.6	*Verificare che lo strumento abbia funzionato e memorizzato regolarmente tutti i dati*	✓	26/11/09	

Direttore di Produzione / ***Production Manager***

G. Cesari

APPENDIX C: INSTRUMENTATIONS

InfoGAP licence keys

Customer: S&V TEKNIK SDN BHD
Address: No. 27 Jalan Nilam 1/2 Subang - Sha Alam Selangor

	InfoGAP package						
Instrument serial #[1] or *Customer code*[2]	*Basic* cod. BSZ300	*Advanced* cod.BSZ302	*Moderate env. microclimate* cod.BSZ303	*Hot env. microclimate* cod.BSZ304	*Hot env. microclimate PHS* cod.BSZ307	*Cold. Env microclimate* cod. BSZ305	Evapo-transpiration FAO Penman Monteith cod. BSZ420
09110783	LFDV9VEVU5	STBNWRUUWS					

In order to enable InfoGAP with the licence keys please read the online user's manual.
All keys must be used after each InfoGAP installation.

Be careful to keep this paper in a safe place.

If you wish to acquire subsequent licence keys please contact LSI at phone +39 02 95.414.200 or by fax at +39 02 95.77.05.94 or by e.mail at info@lsi-lastem.it.

(1) Instrument serial number of Babuc, beginning without zero, to put in the InfoGAP program.
(2) Customer code (8 numeric character) for enabling the SCRicIG program (data acquired by the PC from the cordless sensors).

LSI LASTEM srl - Loc. Dosso - 20090 Settala (MI) - Italy

CERTIFICATO DI COLLAUDO
TEST CERTIFICATE

Sensore radiom.globale *Global radiation sensor* — **Modello:** *Model* BSA010.E — **Matricola:** *Serial nr.* 1813

Procedura di collaudo *Test procedure* PCP030
Procedura di fabbricazione *Manufacturing procedure* PCF025

1. **Ispezione visiva** / ***Visual inspection***

Part	Descrizione / Description	Check	Data	Esecutore Tester
1.1	*Controllare: l'assenza di colature e graffi sulle verniciature, l'uniformità e la consistenza delle anodizzazioni, l'integrità ed il serraggio delle viti,*	X	10/03/09	
1.3	*Controllare la congruenza delle indicazioni della targhetta con il documento guida del codice relativo*	X	10/03/09	

2. **Verifica funzionale** / ***Operative test***

Part	Descrizione / Description	Check	Data	Esecutore Tester
2.1	*Programmare il rilievo per avere una durata di memorizzazione di 48 ore.* *Verificare la presenza di tutte le elaborazioni configurate.*	X	10/03/09	
2.2	*Controllare che la differenza fra i valori di minima e massima non sia superiore alla tolleranza dichiarata:* *Temperatura: ±0,1°C* *Umidità: ±0,2%* *Pressione: ±0,2 hPa* *Direzione: ±1°* *Radiazione: ±3W* *Velocità: ±0,1m/s*	X	10/03/09	
2.6	*Verificare che lo strumento abbia funzionato e memorizzato regolarmente tutti i dati*	X	10/03/09	

Direttore di Produzione ~~/~~ ***Production Manager***
G. Cesari

APPENDIX C: INSTRUMENTATIONS

InfoGAP licence keys

Customer: **S&V TEKNIK SDN BHD**
Address: **No. 27 Jalan Nilam 1/2 Subang - Sha Alam Selangor**

	InfoGAP package						
Instrument serial #[1] or *Customer code*[2]	*Basic* cod. BSZ300	*Advanced* cod.BSZ302	*Moderate env. microclimate* cod.BSZ303	*Hot env. microclimate* cod.BSZ304	*Hot env. microclimate PHS* cod.BSZ307	*Cold. Env microclimate* cod. BSZ305	Evapo-transpiration FAO Penman Monteith cod. BSZ420
1813	DPCVLFGGX3	SZNGFFDCX4	FFSIFQMT12				

In order to enable InfoGAP with the licence keys please read the online user's manual.
All keys must be used after each InfoGAP installation.

Be careful to keep this paper in a safe place.

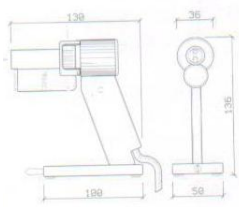
If you wish to acquire subsequent licence keys please contact LSI at phone +39 02 95.414.200 or by fax at +39 02 95.77.05.94 or by e.mail at info@lsi-lastem.it.

(1) Instrument serial number of Babuc, beginning without zero, to put in the InfoGAP program.
(2) Customer code (8 numeric character) for enabling the SCRicIG program (data acquired by the PC from the cordless sensors).

BSR240

Sonda per la misura del flusso termico su pareti. Grandezze ottenute: - Flusso termico - Trasmittanza termica istantanea della parete (se abbinata con n.2 sonde di temperatura aria e n.2 sonde temperatura della parete).	*Probe to measure the thermal flow on walls. Quantities obtained: - Thermal flow - Instantaneous thermal trasmittance if combined with n.2 air temperature probes and n.2 wall temperature probes.*

Campo	± 50 W/m²	*Range*
Incertezza (tot.12 ore misura)	5% VL/*reading* + 0,4 Wm²	*Accuracy (tot 12 hr measure)*
Sensibilità (nominale)	50 µV/Wm²	*Sensitivity (nominal)*
Risoluzione	0,1 W/m²	*Resolution*
Elemento sensibile	Termopila / *Thermopile*	*Sensitive element*
N°canali utilizzati	n.1 (analogico / *analogue*)	*N° of inputs used*
Limiti ambientali	-30+70°C	*Environmental limit*
Norme	ISO9869, ASTM C1046, ASTM 1155	*Standards*
Dimensioni	Diam. 80 mm	*Dimensions*
Cavo	L. 5 m	*Cable*
Fissaggio	A parete con pasta termoconduttiva *Wall mounted with thermoconductive paste*	*Mounting*



BSU102

Sonda psicrometrica a ventilazione forzata con serbatoio d'acqua distillata. Norme ISO7726	*Psychrometric probe with forced ventilation and distilled water tank. ISO7726 standards.*

Campo di misura temperatura	-5...+60°C	*Temperature measurement range*
Accuratezza temperatura	Ved.tab.1/ *See tab.1*	*Temperature accuracy*
Campo di misura umidità	0...100%	*Humidity measurement range*
Accuratezza umidità(T=15...45°C)	2%	*Humidity accuracy(T=15...45°C)*
Tempo di risposta (T90)	1,5 min.	*Response time (T90)*
Risoluzione	%Rel 0,1%	*Resolution*
Elementi sensibili	2xPt100 1/3 DIN	*Sensitive element*
Grandezze ottenute	temperature secca ed umida, umidità relativa, punto di rugiada *dry and wet temperatures, relative humidity, dew point*	*Quantities obtained*
Ventilazione	≅ 4,5 m/s	*Ventilation*
Temp. esercizio	-5...+60°C	*Operating temperature*
Rumorosità	48 dB (a 1m di distanza) / (at 1 m distance)	*Noise level*
Manutenzione	sostituzione calza (quando sporca), aggiunta acqua distillata *replace sheath (when dirty), add distilled water*	*Maintenance*
Durata acqua	≅ 48 ore continue con 50%UR ≅ *48 hours of continuous use with 50% RH*	*Water duration:*
Consumo	≅ 30 mA	*Power consumption*
Uso	Palmare o su stativo BVA306 *Portable use, on surfaces or on stand BVA306.*	*Use*

APPENDIX C: INSTRUMENTATIONS

2- SKYE DATALOGGER: Measure solar radiation

A Eaton de Tavern pour
7/7/2009

SKYE INSTRUMENTS LTD.
21, DDOLE ENTERPRISE PARK,
LLANDRINDOD WELLS,
POWYS LD1 6DF U.K.
TEL: +44 (0) 1597 824811 FAX: +44 (0) 1597 824812
E-Mail: skyemail@skyeinstruments.com

DATAHOG2 / MINIMET2

Datalogger Factory Default settings

If you have just received a new datalogger, it will have been set up with the following default factory settings.

If your datalogger has just been serviced or recalibrated by Skye your own settings will have not been altered.

All logger settings will become operational as soon as power applied. Please follow the instructions attached to the logger base to press PSU reset button inside the battery compartment.

LOGGER TIME	Greenwich Mean Time
LOGGER DATE	Current DD.MM.YY
LOGGER MODE	Continuous logging (Stop / Start mode is disabled)
SAMPLE INTERVAL	30 seconds (except for raingauge channels which are set to 30 minutes to store total not averaged rainfall per interval)
STORAGE INTERVAL	30 minutes
MEMORY FULL MODE	Overwrite oldest record when full
DATAFILE IDENTIFIER	12 characters made up from the loggers 5 figure serial number plus xxxxtxt e.g. for logger with serial number 12345 the DataFile Identifier will be 12345 xxxxtxt
CALIBRATION FACTORS	If the logger is supplied with sensors as a system, all necessary sensor calibration factors have been entered. Please see the Datalogger Hardware Configuration Certificate.

ALL OF THESE LOGGER SETTINGS MAY BE CHANGED OR CUSTOMIZED TO YOUR OW PREFERENCES

Please see the Datalogger Manual for details.

APPENDIX C: INSTRUMENTATIONS

Skye Instruments Ltd,
21 Ddole Enterprise Park, Llandrindod Wells,
Powys, LD1 6DF, UK
Tel: 01597 824811 Fax: 01597 824812
Email: skyemail@skyeinstruments.com
Web: www.skyeinstruments.com

HARDWARE CONFIGURATION AND CALIBRATION CERTIFICATE

DATAHOG2 TYPE : SDL 5250 **SERIAL NO.:** 36153 **Certifcate Issue Date:** 17/06/2009

Software Channel No.	Hardware Channel No.	Socket No.	Configured for Input Type	Gain Code	Termination Code	Scale Code	Full Scale Value	Zero Offset	Units	Sensor Serial No and/or Calibration Factor (when supplied by Skye)
00	33	1	Light	01	00	01	3870.9	0000	W m^{-2}	SKS 1110/S/I 35155 0.05098 µA / W m^{-2}
01	34	2	Light	01	00	01	4120.6	0000	W m^{-2}	SKS 1110/I 36156 0.04789 µA / W m^{-2}
02	35	3	Light	02	00	01	281.23	0000	klx	SKL 310/S/I 36157 0.1389 µA / klx
03	00	4	RH & Air Temperature	00	00	02	2000.0	0000	°C	SKH 2070 / I 36154
04	03	5	RH & Air Temperature	00	00	01	200.00	0000	% RH	SKH 2070 / I 36154
05										
06										
07										
08										

Feedback Resistors Fitted for Current Type Channels

Gain	0	1	2	3	4	5	6	7
Resistor Value	kΩ 5.222	kΩ 10.135	kΩ 51.20	kΩ 99.96	kΩ 513.2	kΩ 996.1	MΩ 5.079	MΩ 10.128

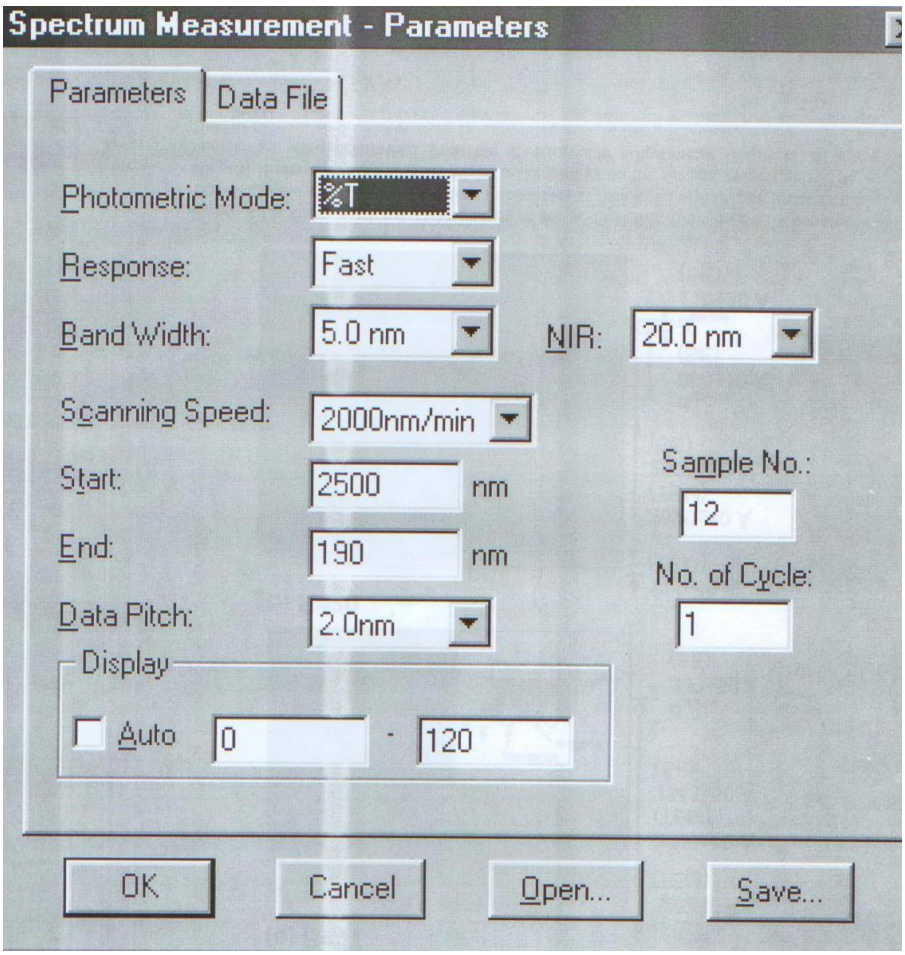
Eprom Version H 192 **Datafile Identifier** 36153xxxxtxt

Where fitted the following standards apply:
RH/Temperature - This probe has been calibrated for relative humidity and air temperature to standard factory specifications at nominal points ;1% and 75.4% RH and 27 degrees celsius.
Pyranometer - Calibrated directly against a calibrated reference World Meteorological Office, First Class Pyranometer under natural daylight conditions. Uncertainty + 5% (typically + 3%) based on an estimated confidence of not less than 95%
Other Light sensors - Calibrated against a National Physical Laboratory UK reference standard lamp. Uncertainty + 5% (typically + 3%) based on an estimated confidence of not less than 95%
Air Pressure - Transducers checked against a UKAS traceable transducer
Wind Sensors & Raingauges - As per manufacturers supplied calibration information

Signed..... **For and on behalf of Skye Instruments Ltd**

APPENDIX C: INSTRUMENTATIONS

3-Spectrophotometer to measure the spectrum



APPENDIX C: INSTRUMENTATIONS

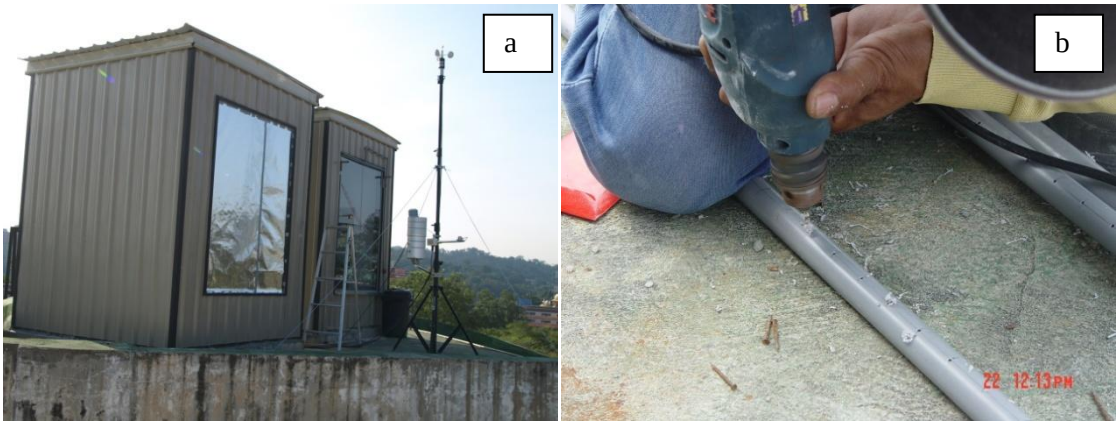


Figure : (a)shade the glazing with aluminum foil, and (b)making the holes for water spray on the glazed façade

Figure: Glazed-water-fill case**,** while the water was filling in the cavity of "Glazed-Water-Fill" case, the glass shuttered. It may be because the broken-glass pane was not clear of cracks.
The level of the water in cavity before the glass gets shuttered. With water –fill in cavity the transparency of the glass increases

APPENDIX C: INSTRUMENTATIONS

Figure: The material of Nano-coat of TiO_2, for increasing the wet-ability of the glazing surfaces

Figure : The machine and spray process of the hydrophilic coatings of TiO_2

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

D. Samples of the experiments' data

1. Examining data of the thermal performance of the SGWF

Table1: TG only, Sunny days (hours) on March 2010

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
17	13	0	37.1	38.6	40.8	41.2	-29.9	36.0	0.0	491.7	2.0	33.0
17	13	1		38.6	40.8	41.2	-29.1					
17	13	2	37.0	38.6	40.8	41.2	-28.8					
17	13	3		38.6	40.8	41.2	-29.7					
17	13	4	37.0	38.6	40.8	41.2	-29.3					
17	13	5		38.6	40.8	41.2	-29.2	35.8		396.6	2.2	33.2
17	13	6	37.1	38.6	40.9	41.2	-29.9					
17	13	7		38.7	40.9	41.2	-30.6					
17	13	8	37.2	38.7	40.9	41.3	-30.6					
17	13	9		38.7	41.0	41.3	-31.4					
17	13	10	37.1	38.7	41.0	41.4	-32.3	35.7	0.0	301.4	2.5	33.4
17	13	11		38.7	41.0	41.4	-32.2					
17	13	12	37.2	38.7	41.1	41.4	-31.3					
17	13	13		38.7	41.1	41.4	-30.4					
17	13	14	37.3	38.8	41.1	41.4	-30.8					
17	13	15		38.8	41.1	41.4	-30.7	36.0		279.0	2.4	32.5
17	13	16	37.2	38.8	41.2	41.4	-31.1					
17	13	17		38.8	41.2	41.4	-31.8					
17	13	18	37.3	38.8	41.2	41.5	-32.1					
17	13	19		38.8	41.3	41.5	-32.3					
17	13	20	37.2	38.8	41.3	41.5	-32.0	36.2	0.0	256.6	2.2	31.6
17	13	21		38.8	41.3	41.5	-31.3					
17	13	22	37.3	38.8	41.3	41.5	-32.1					
17	13	23		38.9	41.3	41.5	-32.1					
17	13	24	37.3	38.9	41.4	41.6	-32.8					
17	13	25		38.9	41.4	41.6	-32.5	36.1		408.0	2.0	32.0
17	13	26	37.4	38.9	41.4	41.6	-32.3					
17	13	27		38.9	41.4	41.6	-32.5					
17	13	28	37.3	38.9	41.4	41.6	-31.9					
17	13	29		38.9	41.5	41.6	-33.3					
17	13	30	37.3	38.9	41.5	41.7	-33.4	36.0	0.0	559.4	1.8	32.3
17	13	31		38.9	41.5	41.7	-33.9					
17	13	32	37.3	38.9	41.5	41.8	-33.6					
17	13	33		38.9	41.6	41.8	-34.9					
17	13	34	37.4	39.0	41.7	41.9	-36.5					
17	13	35		39.0	41.8	42.0	-37.2	36.1		472.3	2.1	32.3

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
17	13	36	37.5	39.0	41.9	42.1	-38.0					
17	13	37		39.0	42.0	42.2	-39.1					
17	13	38	37.7	39.0	42.1	42.3	-39.7					
17	13	39		39.0	42.2	42.4	-40.2					
17	13	40	37.8	39.0	42.2	42.5	-40.1	36.2	0.0	385.2	2.4	32.3
17	13	41		39.0	42.3	42.6	-41.6					
17	13	42	37.6	39.0	42.4	42.7	-42.5					
17	13	43		39.1	42.6	42.8	-43.9					
17	13	44	37.8	39.1	42.7	42.9	-44.6					
17	13	45		39.1	42.8	43.1	-47.3	36.4		381.2	2.1	31.7
17	13	46	37.9	39.1	42.9	43.2	-47.7					
17	13	47		39.1	43.0	43.3	-46.7					
17	13	48	38.0	39.1	43.1	43.3	-47.8					
17	13	49		39.1	43.3	43.4	-49.0					
17	13	50	38.1	39.2	43.4	43.5	-48.1	36.6	0.0	377.1	1.8	31.1
17	13	51		39.2	43.5	43.7	-48.5					
17	13	52	38.1	39.2	43.6	43.8	-50.0					
17	13	53		39.2	43.8	44.0						
17	13	54	38.1	39.2	43.9	44.1	-50.0					
17	13	55		39.3	44.0	44.3		36.7		400.0	1.9	30.7
17	13	56	38.4	39.3	44.2	44.4	-50.0					
17	13	57		39.3	44.3	44.5						
17	13	58	38.5	39.3	44.5	44.6	-50.0					
17	13	59		39.4	44.6	44.8						
17	14	0	38.5	39.4	44.8	45.0	-50.0	36.7	0.0	422.9	1.9	30.3
17	14	1		39.4	44.9	45.1						
17	14	2	38.7	39.4	45.0	45.2	-50.0					
17	14	3		39.5	45.2	45.4						
17	14	4	38.7	39.5	45.3	45.5	-50.0					
17	14	5		39.5	45.5	45.7		36.9		522.1	1.9	29.8
17	14	6	38.8	39.5	45.6	45.8	-50.0					
17	14	7		39.6	45.8	46.0						
17	14	8	38.7	39.6	45.9	46.1	-50.0					
17	14	9		39.7	46.1	46.3						
17	14	10	39.0	39.7	46.2	46.4	-50.0	37.0	0.0	621.2	2.0	29.3
17	14	11		39.8	46.4	46.6						
17	14	12	39.0	39.8	46.5	46.7	-50.0					
17	14	13		39.8	46.7	46.9						
17	14	14	39.2	39.9	46.8	47.1	-50.0					
17	14	15		39.9	47.0	47.2		36.9		658.3	1.9	29.7
17	14	16	39.1	39.9	47.2	47.4	-50.0					
17	14	17		40.0	47.3	47.6						
17	14	18	39.5	40.0	47.5	47.7	-50.0					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
17	14	19		40.1	47.6	47.8						
17	14	20	39.7	40.1	47.7	47.9	-50.0	36.7	0.0	695.4	1.8	30.0
17	14	21		40.2	47.9	48.1						
17	14	22	39.5	40.2	48.1	48.2	-50.0					
17	14	23		40.3	48.2	48.3						
17	14	24	39.6	40.3	48.4	48.4	-50.0					
17	14	25		40.3	48.5	48.6		36.8		534.0	2.0	29.8
17	14	26	39.8	40.4	48.7	48.8	-50.0					
17	14	27		40.4	48.9	49.0						
17	14	28	39.8	40.5	49.1	49.2	-50.0					
17	14	29		40.5	49.3	49.4						
17	14	30	39.9	40.6	49.5	49.7	-50.0	36.9	0.0	372.5	2.2	29.5
17	14	31		40.7	49.7	49.9						
17	14	32	40.1	40.7	50.0	50.1	-50.0					
17	14	33		40.8	50.1	50.2						
17	14	34	40.5	40.8	50.3	50.4	-50.0					
17	14	35		40.9	50.4	50.6		36.9		380.6	1.9	29.2
17	14	36	40.6	40.9	50.6	50.7	-50.0					
17	14	37		41.0	50.8	50.9						
17	14	38	40.6	41.0	51.0	51.0	-50.0					
17	14	39		41.1	51.2	51.2						
17	14	40	40.7	41.1	51.3	51.4	-50.0	37.0	0.0	388.7	1.5	28.9
17	14	41		41.2	51.5	51.5						
17	14	42	40.9	41.2	51.6	51.6	-50.0					
17	14	43		41.3	51.7	51.7						
17	14	44	40.7	41.4	51.9	51.8	-50.0					
17	14	45		41.4	52.0	52.0		37.5		424.3	2.1	27.9
17	14	46	41.0	41.5	52.2	52.1	-50.0					
17	14	47		41.5	52.4	52.3						
17	14	48	41.4	41.6	52.6	52.4	-50.0					
17	14	49		41.7	52.7	52.6						
17	14	50	41.1	41.7	52.9	52.8	-50.0	37.9	0.0	459.9	2.7	26.9
17	14	51		41.8	53.1	53.0						
17	14	52	41.2	41.9	53.3	53.2	-50.0					
17	14	53		41.9	53.5	53.5						
17	14	54	41.5	41.9	53.8	53.7	-50.0					
17	14	55		42.0	54.0	54.0		37.8		487.8	2.1	26.7
17	14	56	41.8	42.1	54.2	54.2	-50.0					
17	14	57		42.1	54.3	54.4						
17	14	58	41.9	42.2	54.4	54.5	-50.0					
17	14	59		42.2	54.5	54.6						
17	15	0	42.1	42.3	54.7	54.8	-50.0	37.7	0.0	515.7	1.5	26.5
17	15	1		42.4	54.8	54.9						

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
17	15	2	42.2	42.4	55.0	55.0	-50.0					
17	15	3		42.5	55.0	55.0						
17	15	4	42.2	42.5	55.1	55.0	-50.0					
17	15	5		42.6	55.2	55.1		37.8		433.3	2.0	26.0
17	15	6	42.2	42.7	55.3	55.2	-50.0					
17	15	7		42.7	55.5	55.3						
17	15	8	42.4	42.8	55.6	55.4	-50.0					
17	15	9		42.9	55.7	55.5						
17	15	10	42.6	43.0	55.8	55.6	-50.0	37.9	0.0	350.9	2.5	25.4
17	15	11		43.0	56.0	55.8						
17	15	12	42.7	43.1	56.2	56.0	-50.0					
17	15	13		43.2	56.3	56.1						
17	15	14	42.8	43.2	56.5	56.3	-50.0					
17	15	15		43.3	56.7	56.4		38.2		348.9	2.5	24.1
17	15	16	43.0	43.3	56.9	56.6	-50.0					
17	15	17		43.4	57.0	56.8						
17	15	18	42.8	43.5	57.1	56.9	-50.0					
17	15	19		43.5	57.3	57.0						
17	15	20	43.3	43.6	57.5	57.2	-50.0	38.4	0.0	346.9	2.6	22.8
17	15	21		43.7	57.6	57.4						
17	15	22	43.3	43.7	57.8	57.6	-50.0					
17	15	23		43.8	58.0	57.8						
17	15	24	43.6	43.8	58.2	58.0	-50.0					
17	15	25		43.9	58.3	58.2		38.5		452.1	2.2	23.6
17	15	26	43.8	44.0	58.5	58.3	-50.0					
17	15	27		44.0	58.7	58.4						
17	15	28	44.0	44.1	58.8	58.6	-50.0					
17	15	29		44.1	58.9	58.7						
17	15	30	43.7	44.2	59.0	58.9	-50.0	38.5	0.0	557.3	1.7	24.3
17	15	31		44.3	59.2	59.1						
17	15	32	44.0	44.4	59.4	59.3	-50.0					
17	15	33		44.4	59.5	59.5						
17	15	34	44.3	44.5	59.7	59.7	-50.0					
17	15	35		44.6	59.9	59.8		38.6		545.2	1.7	24.4
17	15	36	44.6	44.6	60.0	60.0	-50.0					
17	15	37		44.7	60.0	60.0						
17	15	38	44.7	44.8	60.1	60.1	-50.0					
17	15	39		44.8	60.2	60.3						
17	15	40	44.7	44.9	60.3	60.4	-50.0	38.7	0.0	533.0	1.7	24.5
17	15	41		45.0	60.5	60.6						
17	15	42	44.7	45.1	60.7	60.8	-50.0					
17	15	43		45.1	60.8	60.8						
17	15	44	44.6	45.2	60.8	60.8	-50.0					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
17	15	45		45.3	60.8	60.8		39.0		566.4	2.0	24.3
17	15	46	44.5	45.4	60.8	60.7	-50.0					
17	15	47		45.5	60.8	60.7						
17	15	48	44.3	45.5	60.8	60.7	-50.0					
17	15	49		45.6	60.8	60.7						
17	15	50	44.4	45.7	60.8	60.8	-50.0	39.2	0.0	599.7	2.2	24.1
17	15	51		45.8	60.6	60.5						
17	15	52	44.7	45.9	60.3	60.2	-50.0					
17	15	53		45.9	60.2	60.0						
17	15	54	44.6	46.0	60.1	59.9	-50.0					
17	15	55		46.0	60.2	60.0		38.7		554.4	2.3	25.4
17	15	56	44.3	46.1	60.3	60.1	-50.0					
17	15	57		46.1	60.2	60.2						
17	15	58	44.4	46.2	60.2	60.2	-50.0					
17	15	59		46.2	60.1	60.2						
17	16	0	44.8	46.3	60.1	60.1	-50.0	38.1	0.0	509.1	2.4	26.6
17	16	1		46.3	59.9	60.0						
17	16	2	44.7	46.4	59.7	59.9	-50.0					
17	16	3		46.4	59.9	60.0						
17	16	4	44.8	46.4	60.0	60.2	-50.0					
17	16	5		46.4	60.3	60.5		37.7		518.2	2.1	27.2
17	16	6	44.8	46.5	60.5	60.8	-50.0					
17	16	7		46.5	60.7	60.9						
17	16	8	45.0	46.5	60.9	61.1	-50.0					
17	16	9		46.5	61.0	61.1						
17	16	10	45.3	46.5	61.0	61.1	-50.0	37.2	0.0	527.2	1.8	27.7
17	16	11		46.6	61.2	61.3						
17	16	12	45.4	46.6	61.4	61.5	-50.0					
17	16	13		46.7	61.7	61.8						
17	16	14	45.6	46.7	61.9	62.1	-50.0					
17	16	15		46.8	62.1	62.2		37.6		510.2	2.0	27.8
17	16	16	45.7	46.9	62.2	62.4	-50.0					
17	16	17		47.1	62.2	62.4						
17	16	18	45.7	47.2	62.2	62.4	-50.0					
17	16	19		47.5	62.3	62.6						
17	16	20	45.7	47.7	62.4	62.7	-50.0	38.0	0.0	493.2	2.1	27.8
17	16	21		47.9	62.5	62.9						
17	16	22	45.7	48.1	62.7	63.0	-50.0					
17	16	23		48.3	62.9	63.2						
17	16	24	46.2	48.4	63.0	63.4	-50.0					
17	16	25		48.5	63.2	63.6		38.1		456.5	1.9	27.4
17	16	26	46.3	48.7	63.4	63.8	-50.0					
17	16	27		48.8	63.5	63.9						

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
17	16	28	46.5	48.9	63.6	64.0	-50.0					
17	16	29		49.0	63.1	63.5						
17	16	30	46.3	49.1	62.6	63.0	-50.0	38.2	0.0	419.7	1.8	26.9
17	16	31		49.2	61.7	62.1						
17	16	32	45.7	49.3	60.7	61.1	-50.0					
17	16	33		49.4	59.7	60.1						
17	16	34	45.0	49.5	58.7	59.1	-50.0					
17	16	35		49.5	57.8	58.2		38.1		497.1	1.8	27.4
17	16	36	44.8	49.5	56.8	57.3	-50.0					
17	16	37		49.4	56.0	56.4						
17	16	38	44.3	49.3	55.2	55.6	-50.0					
17	16	39		49.2	54.4	54.9						
17	16	40	44.0	49.0	53.7	54.2	-50.0	38.1	0.0	574.4	1.9	27.8
17	16	41		48.9	52.7	53.3						
17	16	42	43.9	48.8	51.7	52.5	-34.2					
17	16	43		48.6	51.0	51.9	-23.0					
17	16	44	43.8	48.5	50.2	51.2	-27.8					
17	16	45		48.3	49.6	50.6	-32.6	36.5		699.4	2.5	35.4
17	16	46	44.0	48.2	49.0	50.0	-27.4					
17	16	47		48.1	48.5	49.4	-24.4					
17	16	48	43.7	47.9	48.0	48.8	-22.4					
17	16	49		47.8	47.6	48.4	-23.2					
17	16	50	43.4	47.7	47.2	48.0	-25.2	35.0	0.0	824.4	3.2	43.0
17	16	51		47.5	47.1	47.9	-23.2					
17	16	52	43.1	47.4	46.9	47.7	-22.5					
17	16	53		47.3	47.3	48.1						
17	16	54	43.3	47.2	47.6	48.4	-45.5					
17	16	55		47.0	47.3	48.1		33.8		996.1	2.6	49.9
17	16	56	43.1	46.9	47.1	47.7	-30.1					
17	16	57		46.8	46.9	47.4	-34.9					
17	16	58	42.9	46.7	46.7	47.1	-26.0					
17	16	59		46.7	47.3	47.7	-36.7					
17	17	0	43.1	46.6	48.0	48.3	-50.0	32.7	0.0	1167.7	2.0	56.7
17	17	1		46.5	48.7	49.0						
17	17	2	42.9	46.5	49.4	49.8	-50.0					
17	17	3		46.4	50.0	50.4						
17	17	4	43.1	46.3	50.6	51.0	-50.0					
17	17	5		46.2	51.1	51.6		32.9		1166.3	2.4	56.1
17	17	6	43.3	46.1	51.6	52.2	-50.0					
17	17	7		46.1	52.1	52.7						
17	17	8	43.4	46.1	52.6	53.1	-50.0					
17	17	9		46.0	52.9	53.5						
17	17	10	43.5	46.0	53.3	53.8	-50.0	33.1	0.0	1164.9	2.8	55.4

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
17	17	11		46.0	53.6	54.2						
17	17	12	43.6	46.0	54.0	54.5	-50.0					
17	17	13		46.0	54.3	54.8						
17	17	14	43.8	46.0	54.5	55.1	-50.0					
17	17	15		46.0	54.8	55.4		33.5		1172.5	2.8	54.8
17	17	16	44.0	46.0	55.0	55.6	-50.0					
17	17	17		46.1	55.3	55.9						
17	17	18	44.0	46.1	55.6	56.1	-50.0					
17	17	19		46.1	55.8	56.3						
17	17	20	44.3	46.2	55.9	56.4	-50.0	33.9	0.0	1180.1	2.8	54.2
17	17	21		46.2	56.1	56.6						
17	17	22	44.3	46.3	56.3	56.7	-50.0					
17	17	23		46.3	56.3	56.9						
17	17	24	44.5	46.4	56.4	57.0	-50.0					
17	17	25		46.4	56.4	57.0		33.7		1172.8	2.8	54.9
17	17	26	44.6	46.5	56.4	57.0	-50.0					
17	17	27		46.5	56.2	56.6						
17	17	28	44.6	46.5	55.9	56.3	-50.0					
17	17	29		46.6	56.0	56.3						
17	17	30	44.6	46.6	56.0	56.3	-50.0	33.6	0.0	1165.4	2.7	55.5
17	17	31		46.7	56.0	56.4						
17	17	32	44.6	46.8	56.1	56.4	-50.0					
17	17	33		46.8	56.1	56.4						
17	17	34	44.7	46.8	56.2	56.4	-50.0					
17	17	35		46.9	56.2	56.4		33.5		1228.2	3.2	56.0
17	17	36	44.8	46.9	56.1	56.4	-50.0					
17	17	37		47.0	56.1	56.3						
17	17	38	44.8	47.0	56.1	56.3	-50.0					
17	17	39		47.1	56.2	56.4						
17	17	40	44.8	47.1	56.3	56.5	-50.0	33.3	0.0	1291.0	3.7	56.4
17	17	41		47.1	56.4	56.7						
17	17	42	44.8	47.2	56.5	56.9	-50.0					
17	17	43		47.2	56.6	57.0						
17	17	44	45.0	47.2	56.6	57.1	-50.0					
17	17	45		47.2	56.7	57.1		33.3		1257.1	3.4	56.8
17	17	46	45.0	47.3	56.7	57.1	-50.0					
17	17	47		47.3	56.4	56.9						
17	17	48	45.0	47.3	56.2	56.6	-50.0					
17	17	49		47.3	56.0	56.5						
17	17	50	44.9	47.4	55.8	56.4	-50.0	33.3	0.0	1223.2	3.1	57.2
17	17	51		47.4	55.9	56.6						
17	17	52	45.1	47.4	55.9	56.7	-50.0					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Table 2: TGWF 1.2- SUNNY

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURF ACE °C prototype	TeSURF ACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
24	13	0	35.4	37.7	31.5	39.9	42.0	33.6	0.0	763.2	1.8	50.0
24	13	1		37.7	31.5	39.9	37.7					
24	13	2	35.4	37.7	31.5	39.9	34.6					
24	13	3		37.7	31.6	40.0	33.0					
24	13	4	35.3	37.7	31.6	40.0	31.5					
24	13	5		37.7	31.6	40.0	31.3	33.7		866.7	1.7	49.9
24	13	6	34.9	37.7	31.6	40.1	30.2					
24	13	7		37.7	31.6	40.1	30.8					
24	13	8	35.1	37.7	31.6	40.1	29.3					
24	13	9		37.7	31.6	40.1	27.8					
24	13	10	35.1	37.7	31.7	40.2	27.5	33.8	0.0	970.1	1.5	49.7
24	13	11		37.7	31.7	40.3	26.5					
24	13	12	35.0	37.7	31.7	40.3	27.3					
24	13	13		37.7	31.7	40.4	27.5					
24	13	14	35.1	37.8	31.7	40.4	27.1					
24	13	15		37.8	31.7	40.4	26.0	33.9		994.3	1.5	49.7
24	13	16	35.0	37.8	31.8	40.5	25.1					
24	13	17		37.8	31.8	40.5	24.5					
24	13	18	35.0	37.8	31.8	40.6	24.3					
24	13	19		37.8	31.9	40.6	23.6					
24	13	20	35.1	37.8	31.9	40.7	24.4	33.9	0.0	1018.5	1.4	49.6
24	13	21		37.9	32.0	40.8	23.8					
24	13	22	35.0	37.9	32.0	40.8	22.8					
24	13	23		37.9	32.0	40.9	23.3					
24	13	24	35.1	37.9	32.1	40.9	24.2					
24	13	25		37.9	32.1	41.0	24.0	34.3		943.1	1.1	48.8
24	13	26	35.1	37.9	32.1	41.1	23.6					
24	13	27		37.9	32.1	41.2	23.8					
24	13	28	35.1	38.0	32.2	41.2	24.4					
24	13	29		38.0	32.2	41.3	23.1					
24	13	30	35.1	38.0	32.2	41.3	22.7	34.7	0.0	867.8	0.9	48.0
24	13	31		38.0	32.3	41.4	22.0					
24	13	32	35.2	38.1	32.3	41.5	21.4					
24	13	33		38.1	32.4	41.7	20.0					
24	13	34	35.2	38.1	32.5	41.9	18.2					
24	13	35		38.1	32.6	42.0	17.6	35.5		758.8	1.2	45.7
24	13	36	35.3	38.2	32.7	42.2	16.8					
24	13	37		38.2	32.7	42.4	17.3					
24	13	38	35.4	38.3	32.8	42.6	17.1					
24	13	39		38.3	32.9	42.7	16.4					
24	13	40	35.4	38.3	33.0	42.9	16.4	36.2	0.0	649.9	1.5	43.4

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
24	13	41		38.4	33.0	43.0	15.8					
24	13	42	35.4	38.4	33.1	43.1	14.8					
24	13	43		38.5	33.2	43.2	14.9					
24	13	44	35.4	38.5	33.3	43.3	14.9					
24	13	45		38.5	33.3	43.4	14.5	36.6		742.6	1.5	43.0
24	13	46	35.4	38.6	33.4	43.5	15.0					
24	13	47		38.6	33.5	43.6	13.5					
24	13	48	35.4	38.7	33.5	43.6	12.9					
24	13	49		38.7	33.6	43.8	12.2					
24	13	50	35.3	38.8	33.7	43.9	12.2	37.0	0.0	835.3	1.4	42.5
24	13	51		38.8	33.8	44.0	10.8					
24	13	52	35.5	38.8	33.8	44.1	11.6					
24	13	53		38.9	33.9	44.2	13.5					
24	13	54	35.4	38.9	33.9	44.3	13.2					
24	13	55		38.9	33.9	44.5	12.3	35.9		872.9	1.4	45.2
24	13	56	35.4	39.0	33.9	44.6	20.9					
24	13	57		39.0	33.8	44.7	24.7					
24	13	58	35.5	39.1	33.7	44.9	21.6					
24	13	59		39.1	33.7	45.0	19.2					
24	14	0	35.3	39.2	33.7	45.0	17.2	34.8	0.0	910.6	1.3	47.9
24	14	1		39.2	33.7	45.2	15.3					
24	14	2	35.2	39.2	33.7	45.3	13.2					
24	14	3		39.3	33.8	45.6	11.3					
24	14	4	35.4	39.3	33.9	45.8	10.3					
24	14	5		39.3	34.0	46.0	9.5	34.9		842.9	1.4	47.9
24	14	6	35.4	39.4	34.1	46.2	8.4					
24	14	7		39.4	34.2	46.3	10.2					
24	14	8	35.6	39.4	34.2	46.5	8.7					
24	14	9		39.5	34.3	46.6	6.3					
24	14	10	35.6	39.5	34.4	46.8	10.0	34.9	0.0	775.3	1.5	47.9
24	14	11		39.6	34.4	46.9	11.6					
24	14	12	35.6	39.6	34.4	47.0	14.7					
24	14	13		39.6	34.4	47.0	12.9					
24	14	14	35.5	39.7	34.4	47.0	15.0					
24	14	15		39.7	34.4	47.1	10.1	34.9		869.1	1.8	47.3
24	14	16	35.3	39.8	34.5	47.2	7.1					
24	14	17		39.8	34.5	47.3	7.7					
24	14	18	35.4	39.9	34.6	47.4	7.9					
24	14	19		39.9	34.7	47.7	7.7					
24	14	20	35.7	40.0	34.7	47.9	7.0	34.9	0.0	962.9	2.1	46.8
24	14	21		40.0	34.8	48.1	5.4					
24	14	22	35.8	40.1	34.9	48.4	6.1					
24	14	23		40.1	34.8	48.4	10.1					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
24	14	24	35.8	40.1	34.7	48.4	22.1					
24	14	25		40.2	34.6	48.1	22.4	35.2		909.0	1.7	45.4
24	14	26	35.7	40.3	34.4	47.9	22.0					
24	14	27		40.3	34.3	47.6	20.0					
24	14	28	35.8	40.3	34.2	47.4	17.6					
24	14	29		40.4	34.2	47.2	18.7					
24	14	30	35.8	40.4	34.2	47.0	16.3	35.4	0.0	855.2	1.3	44.0
24	14	31		40.4	34.3	46.9	13.2					
24	14	32	35.6	40.5	34.5	46.9	4.3					
24	14	33		40.5	34.6	47.1	2.4					
24	14	34	35.7	40.5	34.8	47.4	2.2					
24	14	35		40.5	34.9	47.7	0.3	35.2		915.1	1.4	45.2
24	14	36	35.8	40.6	35.1	48.1	-0.7					
24	14	37		40.6	35.2	48.4	0.3					
24	14	38	35.9	40.6	35.3	48.6	0.6					
24	14	39		40.6	35.2	48.7	11.3					
24	14	40	35.9	40.7	35.0	48.7	23.3	34.9	0.0	975.1	1.5	46.3
24	14	41		40.7	35.0	48.6	17.8					
24	14	42	35.9	40.8	34.9	48.4	4.4					
24	14	43		40.8	35.1	48.7	-1.7					
24	14	44	35.9	40.8	35.4	48.9	-1.8					
24	14	45		40.8	35.5	49.1	1.0	35.0		1011.9	1.5	46.5
24	14	46	36.0	40.8	35.6	49.3	1.6					
24	14	47		40.9	35.7	49.5	0.7					
24	14	48	36.1	40.9	35.7	49.8	2.5					
24	14	49		41.0	35.7	49.9	2.8					
24	14	50	36.1	41.0	35.7	50.0	10.6	35.1	0.0	1048.7	1.6	46.7
24	14	51		41.1	35.8	50.2	1.0					
24	14	52	36.1	41.1	35.9	50.5	-2.6					
24	14	53		41.1	35.8	50.4	3.8					
24	14	54	36.1	41.2	35.6	50.4	28.6					
24	14	55		41.2	35.3	49.9	28.8	34.9		1030.5	1.8	47.6
24	14	56	35.9	41.3	34.9	49.5	26.5					
24	14	57		41.3	34.8	49.0	24.1					
24	14	58	35.7	41.4	34.6	48.6	22.0					
24	14	59		41.4	34.6	48.4	22.0					
24	15	0	35.7	41.4	34.5	48.1	13.8	34.7	0.0	1012.4	2.0	48.5
24	15	1		41.4	34.8	48.3	-1.7					
24	15	2	35.7	41.5	35.1	48.5	-2.2					
24	15	3		41.5	35.3	48.8	-2.4					
24	15	4	35.9	41.5	35.5	49.1	-2.1					
24	15	5		41.5	35.6	49.5	-3.1	34.4		1064.6	2.2	49.4
24	15	6	36.0	41.5	35.6	49.8	4.7					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
24	15	7		41.6	35.6	50.0	-0.3					
24	15	8	36.0	41.6	35.6	50.2	21.9					
24	15	9		41.6	35.2	49.8	30.3					
24	15	10	36.0	41.7	34.9	49.3	25.7	34.1	0.0	1116.8	2.3	50.4
24	15	11		41.7	35.1	49.5	-0.7					
24	15	12	35.8	41.7	35.4	49.7	-5.1					
24	15	13		41.7	35.3	49.7	3.1					
24	15	14	35.8	41.7	35.2	49.7	22.2					
24	15	15		41.8	35.3	49.8	13.2	34.0		1085.9	2.6	51.1
24	15	16	35.8	41.8	35.3	49.8	-1.7					
24	15	17		41.8	35.2	49.9	-6.5					
24	15	18	36.0	41.9	35.2	50.0	25.8					
24	15	19		41.9	34.9	49.6	27.6					
24	15	20	35.9	41.9	34.6	49.3	27.1	33.9	0.0	1055.0	2.8	51.8
24	15	21		41.9	34.4	48.8	28.3					
24	15	22	35.9	41.9	34.2	48.4	29.6					
24	15	23		42.0	34.0	47.9	27.2					
24	15	24	35.7	42.0	33.9	47.4	27.1					
24	15	25		42.0	33.8	47.1	24.4	33.9		1003.2	2.3	51.2
24	15	26	35.6	41.9	33.7	46.7	22.5					
24	15	27		41.9	33.8	46.6	20.5					
24	15	28	35.7	41.9	33.8	46.4	5.9					
24	15	29		41.9	34.4	47.0	-19.0					
24	15	30	35.6	41.9	35.0	47.6	-20.2	33.9	0.0	951.4	1.8	50.7
24	15	31		41.9	35.3	48.3	-17.0					
24	15	32	35.7	41.9	35.7	49.0	-13.5					
24	15	33		41.8	35.7	49.5	-10.2					
24	15	34	35.9	41.8	35.8	50.0	10.1					
24	15	35		41.8	35.3	49.6	30.5	33.9		971.6	1.8	50.7
24	15	36	35.8	41.8	34.9	49.3	30.8					
24	15	37		41.8	34.6	48.8	28.5					
24	15	38	35.7	41.9	34.3	48.4	27.0					
24	15	39		41.9	34.2	48.0	25.3					
24	15	40	35.6	41.9	34.0	47.7	23.2	33.9	0.0	991.7	1.8	50.8
24	15	41		41.9	33.9	47.4	22.0					
24	15	42	35.5	41.9	33.9	47.1	21.7					
24	15	43		41.8	33.8	46.8	20.4					
24	15	44	35.5	41.8	33.7	46.5	22.8					
24	15	45		41.8	33.7	46.2	21.1	34.0		1008.3	1.7	50.4
24	15	46	35.4	41.8	33.6	45.9	22.1					
24	15	47		41.8	33.5	45.7	22.1					
24	15	48	35.4	41.7	33.5	45.4	20.3					
24	15	49		41.7	33.4	45.3	18.9					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
24	15	50	35.4	41.7	33.4	45.2	18.4	34.0	0.0	1025.0	1.5	50.0
24	15	51		41.7	33.4	45.0	17.9					
24	15	52	35.4	41.6	33.4	44.9	16.4					
24	15	53		41.6	33.7	45.1	15.0					
24	15	54	35.4	41.6	34.0	45.3	-22.9					
24	15	55		41.5	34.6	46.2	-28.0	33.8		972.0	1.1	50.5
24	15	56	35.5	41.5	35.2	47.1	-22.5					
24	15	57		41.5	35.1	47.4	-7.3					
24	15	58	35.6	41.4	34.9	47.7	20.9					
24	15	59		41.4	34.7	47.5	21.9					
24	16	0	35.6	41.4	34.4	47.3	20.3	33.5	0.0	918.9	0.7	50.9
24	16	1		41.4	34.3	47.1	19.6					
24	16	2	35.5	41.4	34.1	46.9	18.8					
24	16	3		41.4	34.1	46.7	11.8					
24	16	4	35.3	41.4	34.1	46.6	15.2					
24	16	5		41.4	34.4	46.7	6.6	33.9		945.7	1.1	50.0
24	16	6	35.3	41.4	34.6	46.9	-16.3					
24	16	7		41.4	35.1	47.7	-26.6					
24	16	8	35.5	41.4	35.6	48.4	-23.1					
24	16	9		41.4	35.4	48.5	14.8					
24	16	10	35.6	41.4	35.2	48.6	13.2	34.3	0.0	972.5	1.5	49.0
24	16	11		41.5	35.2	48.6	7.5					
24	16	12	35.7	41.6	35.2	48.7	-0.1					
24	16	13		41.7	35.3	48.9	3.9					
24	16	14	35.7	41.7	35.4	49.0	-14.3					
24	16	15		41.7	35.9	49.8	-29.1	34.4		798.0	1.4	48.3
24	16	16	35.9	41.7	36.4	50.5	-28.9					
24	16	17		41.8	36.8	51.2	-26.9					
24	16	18	36.1	41.8	37.1	52.0	-25.1					
24	16	19		41.9	37.3	52.7	-23.6					
24	16	20	36.3	42.1	37.5	53.4	-23.4	34.5	0.0	623.5	1.2	47.7
24	16	21		42.2	37.7	54.0	-24.7					
24	16	22	36.5	42.4	38.0	54.7	-24.8					
24	16	23		42.5	38.1	55.3	-24.3					
24	16	24	36.7	42.6	38.3	55.9	-22.3					
24	16	25		42.8	38.4	56.3	-20.3	34.9		667.5	1.1	46.7
24	16	26	36.9	42.9	38.5	56.8	-17.4					
24	16	27		43.0	38.5	57.1	-14.0					
24	16	28	37.1	43.2	38.6	57.5	-17.2					
24	16	29		43.3	38.7	57.8	-18.3					
24	16	30	37.3	43.5	38.8	58.1	-20.4	35.3	0.0	711.6	1.1	45.8
24	16	31		43.6	39.0	58.5	-21.9					
24	16	32	37.4	43.7	39.1	58.9	-20.8					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
24	16	33		43.8	39.2	59.3	-20.1					
24	16	34	37.6	44.0	39.3	59.6	-20.9					
24	16	35		44.1	39.5	59.9	-20.9	35.8		878.7	1.1	44.4
24	16	36	37.8	44.2	39.6	60.2	-18.8					
24	16	37		44.3	39.6	60.4	-18.1					
24	16	38	38.1	44.5	39.7	60.5	-15.4					
24	16	39		44.6	39.7	60.3	-10.7					
24	16	40	38.2	44.8	39.7	60.2	-8.7	36.3	0.0	1045.8	1.2	43.0
24	16	41		44.9	39.6	60.0	-8.9					
24	16	42	38.3	45.0	39.6	59.9	-7.6					
24	16	43		45.1	39.6	59.7	-7.4					
24	16	44	38.4	45.2	39.6	59.6	-6.7					
24	16	45		45.3	39.5	59.5	-3.3	36.2		1146.2	2.4	45.1
24	16	46	38.5	45.4	39.4	59.4	-3.3					
24	16	47		45.6	39.4	59.4	-5.3					
24	16	48	38.5	45.7	39.4	59.4	-3.2					
24	16	49		45.8	39.3	59.3	-1.3					
24	16	50	38.6	45.9	39.3	59.2	-1.8	36.0	0.0	1246.6	3.5	47.2
24	16	51		45.9	39.3	59.1	-3.7					
24	16	52	38.7	46.0	39.3	59.1	-4.8					
24	16	53		46.1	39.3	59.1	-4.0					
24	16	54	38.8	46.2	39.3	59.1	-3.2					
24	16	55		46.2	39.2	59.1	-1.8	35.7		1247.2	3.5	50.4
24	16	56	38.8	46.3	39.2	59.1	-1.5					
24	16	57		46.4	39.1	59.0	-0.6					
24	16	58	38.9	46.5	39.1	58.9	2.9					
24	16	59		46.5	39.0	58.6	2.4					
24	17	0	38.8	46.5	39.0	58.4	2.3	35.4	0.0	1247.7	3.4	53.7
24	17	1		46.6	38.9	58.2	2.3					
24	17	2	38.8	46.6	38.8	58.1	2.2					
24	17	3		46.7	38.8	58.0	2.9					
24	17	4	38.8	46.7	38.8	57.9	2.6					
24	17	5		46.7	38.6	57.8	3.9	35.1		1236.7	4.0	53.9
24	17	6	38.8	46.8	38.5	57.7	11.4					
24	17	7		46.8	38.4	57.6	10.4					
24	17	8	38.8	46.8	38.3	57.5	8.9					
24	17	9		46.9	38.2	57.4	10.0					
24	17	10	38.7	46.9	38.1	57.3	8.1	34.8	0.0	1225.7	4.5	54.2
24	17	11		46.9	38.1	57.3	5.4					
24	17	12	38.7	47.0	38.1	57.4	4.1					
24	17	13		47.0	38.1	57.3	5.1					
24	17	14	38.8	47.0	38.1	57.3	7.8					
24	17	15		47.0	38.1	57.2	5.5	34.8		1219.9	4.3	54.8

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
24	17	16	38.8	47.1	38.0	57.0	8.0					
24	17	17		47.1	38.0	56.9	7.9					
24	17	18	38.8	47.1	38.0	56.8	6.9					
24	17	19		47.1	38.0	56.7	5.2					
24	17	20	38.7	47.1	38.0	56.6	5.0	34.7	0.0	1214.1	4.0	55.5
24	17	21		47.1	38.0	56.5	2.9					
24	17	22	38.8	47.2	38.1	56.5	1.0					
24	17	23		47.2	38.1	56.5	2.2					
24	17	24	38.7	47.2	38.1	56.6	2.9					

Table3: TGWF 1 7- sunny days

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
26	13	0	35.5	39.2	32.7	43.1	23.5	34.7	0.0	540.4	1.5	54.6
26	13	1		39.3	32.8	43.2	23.2					
26	13	2	35.5	39.3	32.8	43.2	23.7					
26	13	3		39.3	32.8	43.2	23.6					
26	13	4	35.6	39.4	32.9	43.3	24.0					
26	13	5		39.4	32.9	43.3	23.8	35.1		514.0	1.6	53.0
26	13	6	35.6	39.4	32.9	43.3	23.6					
26	13	7		39.4	32.9	43.4	23.2					
26	13	8	35.6	39.5	32.9	43.4	22.9					
26	13	9		39.5	33.0	43.5	22.4					
26	13	10	35.6	39.5	33.0	43.5	22.4	35.5	0.0	487.6	1.7	51.3
26	13	11		39.5	33.0	43.6	22.5					
26	13	12	35.5	39.6	33.0	43.6	22.4					
26	13	13		39.6	33.1	43.6	23.4					
26	13	14	35.6	39.6	33.1	43.6	24.0					
26	13	15		39.6	33.1	43.7	23.2	35.7		649.5	1.7	51.1
26	13	16	35.6	39.7	33.1	43.7	23.3					
26	13	17		39.7	33.1	43.8	23.0					
26	13	18	35.6	39.7	33.2	43.8	23.2					
26	13	19		39.7	33.2	43.9	23.0					
26	13	20	35.6	39.8	33.2	43.9	22.9	35.9	0.0	811.5	1.8	50.9
26	13	21		39.8	33.2	44.0	23.1					
26	13	22	35.6	39.8	33.2	44.0	23.1					
26	13	23		39.9	33.2	44.0	23.5					
26	13	24	35.6	39.9	33.2	44.1	24.1					
26	13	25		39.9	33.2	44.0	23.7	35.6		798.7	1.6	51.1

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
26	13	26	35.6	40.0	33.2	44.0	22.3					
26	13	27		40.0	33.2	44.0	21.5					
26	13	28	35.4	40.0	33.2	44.0	22.2					
26	13	29		40.0	33.3	44.0	22.2					
26	13	30	35.6	40.0	33.3	44.0	22.1	35.3	0.0	785.9	1.5	51.2
26	13	31		40.0	33.3	44.0	22.3					
26	13	32	35.7	40.1	33.3	44.0	23.1					
26	13	33		40.1	33.3	44.0	23.4					
26	13	34	35.6	40.1	33.3	44.0	21.3					
26	13	35		40.1	33.3	44.0	20.6	35.0		734.4	1.5	53.0
26	13	36	35.6	40.1	33.4	44.0	20.3					
26	13	37		40.1	33.4	44.1	19.4					
26	13	38	35.6	40.2	33.4	44.1	18.4					
26	13	39		40.2	33.4	44.1	19.1					
26	13	40	35.4	40.2	33.5	44.1	20.7	34.7	0.0	682.8	1.5	54.9
26	13	41		40.2	33.4	44.1	21.6					
26	13	42	35.5	40.2	33.4	44.0	22.1					
26	13	43		40.2	33.4	44.0	23.0					
26	13	44	35.5	40.3	33.4	43.9	25.3					
26	13	45		40.3	33.3	43.9	25.0	34.5		862.2	1.7	55.5
26	13	46	35.4	40.3	33.3	43.8	20.4					
26	13	47		40.3	33.4	43.9	17.1					
26	13	48	35.4	40.3	33.4	44.0	18.7					
26	13	49		40.3	33.4	44.0	20.0					
26	13	50	35.5	40.3	33.4	44.0	22.5	34.4	0.0	1041.6	1.9	56.1
26	13	51		40.3	33.4	43.9	23.8					
26	13	52	35.4	40.3	33.3	43.8	23.1					
26	13	53		40.3	33.3	43.7	22.7					
26	13	54	35.5	40.3	33.2	43.6	23.5					
26	13	55		40.3	33.2	43.5	25.8	34.1		947.2	1.8	57.2
26	13	56	35.4	40.3	33.1	43.4	29.0					
26	13	57		40.3	33.0	43.3	28.8					
26	13	58	35.4	40.3	33.0	43.2	27.3					
26	13	59		40.3	33.0	43.4	20.6					
26	14	0	35.4	40.3	33.1	43.5	16.9	33.8	0.0	852.8	1.6	58.2
26	14	1		40.3	33.2	43.7	15.4					
26	14	2	35.3	40.3	33.3	44.0	15.4					
26	14	3		40.4	33.4	44.1	16.0					
26	14	4	35.3	40.4	33.4	44.3	15.5					
26	14	5		40.4	33.5	44.5	15.5	33.8		948.9	1.9	57.8
26	14	6	35.3	40.4	33.5	44.6	15.0					
26	14	7		40.4	33.6	44.8	14.5					
26	14	8	35.2	40.4	33.6	45.0	14.7					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
26	14	9		40.4	33.7	45.1	14.9					
26	14	10	35.3	40.4	33.7	45.2	13.9	33.9	0.0	1045.1	2.2	57.3
26	14	11		40.4	33.8	45.4	12.6					
26	14	12	35.3	40.5	33.8	45.5	13.1					
26	14	13		40.5	33.8	45.6	13.8					
26	14	14	35.4	40.5	33.7	45.6	22.7					
26	14	15		40.5	33.7	45.5	19.4	34.2		1048.4	2.1	56.1
26	14	16	35.4	40.5	33.6	45.5	22.5					
26	14	17		40.5	33.5	45.3	24.6					
26	14	18	35.3	40.5	33.4	45.1	25.3					
26	14	19		40.6	33.4	45.0	23.5					
26	14	20	35.2	40.6	33.4	44.8	15.8	34.5	0.0	1051.8	2.1	54.9
26	14	21		40.6	33.5	44.9	11.8					
26	14	22	35.1	40.6	33.6	45.0	17.3					
26	14	23		40.6	33.5	44.9	22.3					
26	14	24	35.2	40.7	33.4	44.8	22.6					
26	14	25		40.7	33.4	44.7	22.6	34.3		1114.8	2.1	55.3
26	14	26	35.2	40.7	33.3	44.6	20.5					
26	14	27		40.7	33.5	44.8	8.1					
26	14	28	35.2	40.7	33.7	45.0	5.8					
26	14	29		40.7	33.8	45.3	6.6					
26	14	30	35.3	40.7	33.9	45.6	7.1	34.2	0.0	1177.8	2.2	55.7
26	14	31		40.7	34.0	45.8	10.2					
26	14	32	35.2	40.7	34.1	46.0	10.0					
26	14	33		40.7	34.1	46.2	8.9					
26	14	34	35.3	40.7	34.2	46.5	8.9					
26	14	35		40.8	34.3	46.6	8.5	34.0		1192.5	2.2	56.3
26	14	36	35.2	40.8	34.3	46.8	7.7					
26	14	37		40.8	34.4	47.0	7.2					
26	14	38	35.3	40.8	34.4	47.2	7.5					
26	14	39		40.8	34.5	47.4	7.2					
26	14	40	35.4	40.9	34.5	47.6	6.4	33.7	0.0	1207.2	2.3	56.8
26	14	41		40.9	34.6	47.8	4.9					
26	14	42	35.5	40.9	34.7	48.1	4.3					
26	14	43		41.0	34.8	48.4	3.4					
26	14	44	35.6	41.0	34.9	48.6	2.1					
26	14	45		41.0	35.0	48.9	1.8	34.7		801.1	2.4	53.2
26	14	46	35.6	41.0	35.1	49.1	1.9					
26	14	47		41.1	35.2	49.3	2.2					
26	14	48	35.6	41.1	35.2	49.5	2.2					
26	14	49		41.2	35.3	49.7	1.9					
26	14	50	35.7	41.2	35.4	49.9	1.4	35.7	0.0	395.0	2.5	49.6
26	14	51		41.3	35.5	50.2	-0.1					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
26	14	52	35.8	41.3	35.6	50.5	-1.7					
26	14	53		41.3	35.6	50.6	1.3					
26	14	54	35.8	41.4	35.5	50.7	14.7					
26	14	55		41.4	35.3	50.5	18.5	36.1		484.1	2.0	48.9
26	14	56	35.9	41.5	35.2	50.4	22.4					
26	14	57		41.5	35.0	50.2	22.4					
26	14	58	35.9	41.6	34.8	49.9	21.1					
26	14	59		41.6	34.8	49.7	16.4					
26	15	0	35.9	41.6	34.7	49.5	16.9	36.4	0.0	573.3	1.5	48.2
26	15	1		41.7	34.6	49.2	19.6					
26	15	2	35.7	41.7	34.5	48.9	20.9					
26	15	3		41.7	34.7	48.9	7.7					
26	15	4	35.6	41.8	34.9	49.0	-0.7					
26	15	5		41.8	35.1	49.2	0.0	36.3		576.9	2.0	48.5
26	15	6	35.7	41.8	35.2	49.5	2.4					
26	15	7		41.9	35.4	49.8	1.5					
26	15	8	36.0	41.9	35.5	50.1	0.3					
26	15	9		41.9	35.6	50.5	0.1					
26	15	10	36.1	42.0	35.7	50.9	-0.4	36.2	0.0	580.6	2.6	48.7
26	15	11		42.0	35.6	50.9	9.8					
26	15	12	36.1	42.1	35.4	50.9	24.6					
26	15	13		42.1	35.2	50.5	26.3					
26	15	14	36.1	42.2	34.9	50.1	25.3					
26	15	15		42.2	34.8	49.7	24.7	36.2		789.6	2.3	48.8
26	15	16	36.0	42.2	34.6	49.3	22.7					
26	15	17		42.2	34.9	49.4	1.0					
26	15	18	36.1	42.2	35.2	49.5	-4.2					
26	15	19		42.3	35.4	49.9	-3.9					
26	15	20	36.1	42.3	35.6	50.3	-2.5	36.3	0.0	998.5	2.0	48.8
26	15	21		42.3	35.8	50.6	-1.5					
26	15	22	36.3	42.3	35.9	50.9	0.1					
26	15	23		42.4	35.7	50.9	21.6					
26	15	24	36.3	42.4	35.6	50.9	3.1					
26	15	25		42.5	35.8	51.2	-5.1	36.3		783.7	2.1	48.3
26	15	26	36.3	42.5	36.1	51.6	-4.5					
26	15	27		42.5	36.2	51.9	-2.5					
26	15	28	36.4	42.5	36.3	52.2	-1.8					
26	15	29		42.6	36.4	52.5	-1.5					
26	15	30	36.6	42.6	36.5	52.8	-2.3	36.4	0.0	568.8	2.1	47.8
26	15	31		42.7	36.5	53.0	0.2					
26	15	32	36.7	42.7	36.6	53.3	0.4					
26	15	33		42.7	36.7	53.5	-0.6					
26	15	34	36.7	42.8	36.8	53.7	-1.3					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
26	15	35		42.9	36.8	53.9	-2.6	36.4		738.0	2.3	48.0
26	15	36	36.8	42.9	36.9	54.2	-1.8					
26	15	37		43.0	37.0	54.4	-0.6					
26	15	38	36.9	43.0	37.0	54.7	-1.7					
26	15	39		43.1	37.1	54.9	-2.0					
26	15	40	37.0	43.2	37.2	55.1	-2.2	36.4	0.0	907.1	2.4	48.2
26	15	41		43.2	37.3	55.4	-3.6					
26	15	42	37.1	43.3	37.4	55.6	-4.6					
26	15	43		43.3	37.4	55.8	-3.7					
26	15	44	37.2	43.4	37.5	55.9	-2.5					
26	15	45		43.5	37.5	56.0	0.0	36.5		988.7	2.2	48.3
26	15	46	37.3	43.5	37.5	56.1	1.0					
26	15	47		43.6	37.5	56.3	1.5					
26	15	48	37.4	43.7	37.6	56.4	0.0					
26	15	49		43.8	37.6	56.5	-0.6					
26	15	50	37.4	43.8	37.6	56.7	-1.4	36.6	0.0	1070.2	2.0	48.3
26	15	51		43.9	37.7	56.8	1.8					
26	15	52	37.5	44.0	37.7	56.9	-4.6					
26	15	53		44.1	37.9	57.1	-7.4					
26	15	54	37.6	44.1	38.0	57.3	-8.7					
26	15	55		44.2	38.1	57.5	-6.1	36.7		855.9	1.8	47.8
26	15	56	37.7	44.3	38.1	57.6	7.1					
26	15	57		44.3	37.7	57.4	26.9					
26	15	58	37.7	44.4	37.2	57.1	32.5					
26	15	59		44.5	37.1	56.9	22.6					
26	16	0	37.6	44.5	37.0	56.8	4.1	36.8	0.0	641.6	1.5	47.2
26	16	1		44.6	37.0	56.6	17.1					
26	16	2	37.6	44.6	37.0	56.5	1.6					
26	16	3		44.7	37.2	56.6	-5.6					
26	16	4	37.7	44.8	37.4	56.8	-4.1					
26	16	5		44.8	37.5	56.7	0.6	36.9		566.3	1.7	47.2
26	16	6	37.8	44.9	37.6	56.6	1.0					
26	16	7		45.1	37.7	56.8	3.6					
26	16	8	37.8	45.3	37.8	57.0	-3.6					
26	16	9		45.4	37.9	57.3	-5.5					
26	16	10	37.8	45.5	38.1	57.6	-6.1	37.0	0.0	491.0	1.8	47.2
26	16	11		45.7	38.2	57.8	-6.9					
26	16	12	38.0	45.9	38.3	58.0	-5.6					
26	16	13		46.0	38.0	57.7	13.9					
26	16	14	38.1	46.1	37.7	57.3	29.2					
26	16	15		46.2	37.5	57.0	18.6	36.9		577.2	1.8	47.5
26	16	16	38.1	46.3	37.3	56.6	17.9					
26	16	17		46.3	37.3	56.1	13.0					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
26	16	18	37.9	46.3	37.2	55.7	4.4					
26	16	19		46.3	37.4	55.8	-4.8					
26	16	20	38.1	46.3	37.6	55.9	1.5	36.8	0.0	663.4	1.8	47.8
26	16	21		46.3	37.7	55.9	0.5					
26	16	22	38.1	46.4	37.8	56.0	1.0					
26	16	23		46.5	37.6	55.7	28.9					
26	16	24	38.0	46.5	37.4	55.4	5.9					
26	16	25		46.5	37.4	55.4	5.5	37.0		567.0	2.3	47.0
26	16	26	38.1	46.6	37.4	55.4	14.4					
26	16	27		46.6	37.3	55.2	11.8					
26	16	28	38.0	46.6	37.2	55.0	20.3					
26	16	29		46.6	36.9	54.6	28.2					
26	16	30	37.9	46.6	36.6	54.1	27.8	37.2	0.0	470.6	2.8	46.3
26	16	31		46.6	36.7	54.0	20.1					
26	16	32	37.9	46.6	36.8	53.8	-1.7					
26	16	33		46.5	37.0	54.1	-3.1					
26	16	34	38.0	46.5	37.3	54.4	-2.0					
26	16	35		46.5	37.3	54.4	6.9	37.2		575.0	2.6	47.1
26	16	36	38.0	46.5	37.3	54.5	12.3					
26	16	37		46.5	37.0	54.3	25.7					
26	16	38	38.0	46.6	36.7	54.0	30.7					
26	16	39		46.5	36.9	54.2	0.4					
26	16	40	38.0	46.5	37.1	54.4	-3.0	37.1	0.0	679.4	2.4	47.8
26	16	41		46.5	37.1	54.4	2.0					
26	16	42	38.1	46.5	37.0	54.5	28.5					
26	16	43		46.5	36.9	54.3	29.0					
26	16	44	38.1	46.5	36.9	54.2	-2.7					
26	16	45		46.5	37.2	54.6	-9.5	36.9		620.0	2.1	48.9
26	16	46	38.1	46.4	37.6	55.1	-8.3					
26	16	47		46.4	37.8	55.4	-6.2					
26	16	48	38.2	46.5	38.0	55.8	-6.0					
26	16	49		46.5	38.0	56.0	-3.6					
26	16	50	38.4	46.5	38.1	56.3	-0.6	36.6	0.0	560.6	1.8	50.0
26	16	51		46.6	38.1	56.5	0.6					
26	16	52	38.6	46.6	38.2	56.8	0.7					
26	16	53		46.7	38.2	57.0	0.6					
26	16	54	38.6	46.7	38.3	57.3	-0.9					
26	16	55		46.7	38.3	57.6	2.7	36.7		657.6	2.0	50.1
26	16	56	38.8	46.8	38.2	58.0	11.0					
26	16	57		46.8	38.2	58.2	8.7					
26	16	58	38.8	46.8	38.1	58.5	5.5					
26	16	59		46.9	38.2	58.7	3.8					
26	17	0	38.8	46.9	38.2	58.9	2.5	36.7	0.0	754.6	2.3	50.2

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Day	Hour	Minute	TeDry-b °C prototype	TeDry-b °C reference	TeSURFACE °C prototype	TeSURFACE °C - reference	Thermal FLUX W/m2	Out-TempAir C - Ave	Rain mm - Tot	Ext-Rad-GLOBale W/m2 - Ave	Ext-Velocity m/s - Ave	Ext-RH-Ave
26	17	1		46.9	38.3	59.0	0.8					
26	17	2	39.0	46.9	38.4	59.2	1.5					
26	17	3		47.0	38.2	58.9	27.8					
26	17	4	38.9	47.0	38.0	58.6	10.2					
26	17	5		47.0	37.9	58.4	1.7	36.8		657.1	2.0	50.2
26	17	6	38.9	47.0	37.8	58.1	26.6					
26	17	7		47.0	37.7	57.7	30.6					
26	17	8	38.8	47.0	37.6	57.2	2.2					
26	17	9		47.0	37.7	57.2	-2.2					
26	17	10	38.8	47.0	37.8	57.1	16.8	36.8	0.0	559.5	1.7	50.1
26	17	11		47.0	38.0	57.3	-2.3					
26	17	12	38.9	47.0	38.2	57.5	-3.9					
26	17	13		47.0	38.3	57.6	0.3					
26	17	14	38.6	47.0	38.3	57.7	-0.5					
26	17	15		47.0	38.4	57.9	-0.9	36.9		644.1	1.7	50.2
26	17	16	38.7	47.0	38.5	58.0	-0.2					
26	17	17		47.0	38.5	58.1	-0.2					
26	17	18	38.6	47.1	38.6	58.3	-0.2					
26	17	19		47.1	38.6	58.2	3.0					
26	17	20	38.9	47.1	38.6	58.2	5.0	37.0	0.0	728.6	1.8	50.2
26	17	21		47.1	38.6	58.1	4.2					
26	17	22	38.9	47.1	38.6	58.0	5.9					
26	17	23		47.1	38.5	57.9	8.0					
26	17	24	39.0	47.1	38.5	57.8	8.8					

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Solar radiation data:

Table 4: calibration of STGWF

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	28	13	0	26.9	28.4	676.5	89.1
3	28	13	1	24.9	26.2		
3	28	13	2	23.4	24.7		
3	28	13	3	22.0	23.2		
3	28	13	4	20.4	21.3		
3	28	13	5	18.7	19.7	599.5	62.2
3	28	13	6	17.5	18.4		
3	28	13	7	16.3	17.1		
3	28	13	8	15.3	16.3		
3	28	13	9	14.5	15.4		
3	28	13	10	13.9	14.8	522.4	213.5
3	28	13	11	13.9	14.8		
3	28	13	12	13.2	14.3		
3	28	13	13	13.0	14.1		
3	28	13	14	12.6	13.7		
3	28	13	15	12.2	13.2	525.6	216.1
3	28	13	16	12.0	13.0		
3	28	13	17	11.6	12.8		
3	28	13	18	11.0	11.9		
3	28	13	19	10.8	11.9		
3	28	13	20	11.2	12.1	528.8	218.7
3	28	13	21	11.4	12.4		
3	28	13	22	11.2	12.1		
3	28	13	23	11.2	12.1		
3	28	13	24	11.2	12.4		
3	28	13	25	11.4	12.6	472.8	265.6
3	28	13	26	12.0	13.2		
3	28	13	27	12.6	14.1		
3	28	13	28	13.5	15.0		
3	28	13	29	14.1	15.6		
3	28	13	30	14.9	16.5	416.8	312.5
3	28	13	31	15.9	17.8		
3	28	13	32	17.1	18.7		
3	28	13	33	17.5	19.3		
3	28	13	34	17.7	19.3		
3	28	13	35	17.7	19.5	399.6	177.1
3	28	13	36	17.7	19.5		

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	28	13	37	17.5	19.5		
3	28	13	38	17.9	19.7		
3	28	13	39	17.9	19.7		
3	28	13	40	18.3	20.0	382.5	41.7
3	28	13	41	18.7	20.4		
3	28	13	42	20.0	21.7		
3	28	13	43	21.0	23.0		
3	28	13	44	22.0	23.9		
3	28	13	45	23.0	24.7	802.3	355.6
3	28	13	46	23.6	25.4		
3	28	13	47	24.2	26.0		
3	28	13	48	24.7	26.5		
3	28	13	49	25.3	27.1		
3	28	13	50	25.7	27.8	1222.2	752.9
3	28	13	51	27.1	29.3		
3	28	13	52	27.7	29.9		
3	28	13	53	28.1	30.2		
3	28	13	54	27.5	29.7		
3	28	13	55	26.7	28.6	1227.4	758.3
3	28	13	56	26.5	28.4		
3	28	13	57	25.7	27.5		
3	28	13	58	26.5	28.6		
3	28	13	59	27.3	29.7		
3	28	14	0	26.1	28.4	1232.7	763.8
3	28	14	1	24.2	26.5		
3	28	14	2	23.4	25.6		
3	28	14	3	23.6	25.8		
3	28	14	4	25.3	28.0		
3	28	14	5	27.7	31.5	1242.7	736.9
3	28	14	6	29.3	33.8		
3	28	14	7	42.6	70.1		
3	28	14	8	45.2	76.3		
3	28	14	9	45.6	78.5		
3	28	14	10	45.4	79.8	1252.6	710.1
3	28	14	11	45.2	80.7		
3	28	14	12	45.4	81.8		
3	28	14	13	45.4	82.4		
3	28	14	14	46.7	83.3		
3	28	14	15	59.9	85.0	1247.2	683.9
3	28	14	16	82.3	87.8		
3	28	14	17	89.0	88.5		
3	28	14	18	85.2	91.1		
3	28	14	19	63.4	92.2		

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	28	14	20	52.2	93.5	1241.8	657.8
3	28	14	21	53.2	97.2		
3	28	14	22	52.2	96.5		
3	28	14	23	53.6	96.1		
3	28	14	24	72.9	96.7		
3	28	14	25	94.5	98.2	1212.5	616.2
3	28	14	26	99.0	100.9		
3	28	14	27	99.0	100.4		
3	28	14	28	99.6	100.6		
3	28	14	29	100.9	101.1		
3	28	14	30	103.5	105.0	1183.3	574.5
3	28	14	31	102.9	104.8		
3	28	14	32	105.9	106.1		
3	28	14	33	107.4	107.1		
3	28	14	34	105.1	108.0		
3	28	14	35	105.1	107.8	1206.5	650.3
3	28	14	36	106.4	107.8		
3	28	14	37	106.6	107.4		
3	28	14	38	107.4	109.1		
3	28	14	39	107.2	110.2		
3	28	14	40	107.0	111.7	1229.8	726.1
3	28	14	41	107.4	112.8		
3	28	14	42	107.2	112.8		
3	28	14	43	108.6	113.6		
3	28	14	44	110.0	114.1		
3	28	14	45	111.9	115.2	1123.6	618.0
3	28	14	46	112.1	116.5		
3	28	14	47	110.6	116.5		
3	28	14	48	109.8	115.8		
3	28	14	49	109.6	116.0		
3	28	14	50	111.4	117.6	1017.5	509.9
3	28	14	51	112.5	117.8		
3	28	14	52	112.3	117.3		
3	28	14	53	113.9	119.3		
3	28	14	54	114.9	119.7		
3	28	14	55	113.9	119.3	1109.1	644.8
3	28	14	56	114.7	120.2		
3	28	14	57	115.5	121.2		
3	28	14	58	114.9	120.8		
3	28	14	59	114.9	121.0		
3	28	15	0	114.9	121.5	1200.7	779.7
3	28	15	1	116.1	123.2		
3	28	15	2	115.3	123.2		

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	28	15	3	117.2	124.1		
3	28	15	4	117.8	124.1		
3	28	15	5	119.2	124.7	1154.1	794.1
3	28	15	6	119.0	124.5		
3	28	15	7	118.4	124.7		
3	28	15	8	118.6	126.2		
3	28	15	9	118.2	126.2		
3	28	15	10	118.0	126.4	1107.5	808.6
3	28	15	11	116.7	123.4		
3	28	15	12	122.9	131.0		
3	28	15	13	124.5	132.1		
3	28	15	14	125.7	133.6		
3	28	15	15	125.5	133.8	1107.5	743.5
3	28	15	16	126.9	135.6		
3	28	15	17	102.3	113.4		
3	28	15	18	128.4	137.1		
3	28	15	19	130.8	139.5		
3	28	15	20	71.7	72.2	1107.5	678.4
3	28	15	21	114.7	126.4		
3	28	15	22	131.8	140.5		
3	28	15	23	133.7	142.3		
3	28	15	24	134.5	144.4		
3	28	15	25	135.3	145.5	1091.7	627.1
3	28	15	26	135.1	144.7		
3	28	15	27	134.7	144.7		
3	28	15	28	133.4	143.1		
3	28	15	29	94.9	104.1		
3	28	15	30	138.1	146.0	1075.9	575.9
3	28	15	31	141.6	150.9		
3	28	15	32	143.8	152.3		
3	28	15	33	143.4	150.7		
3	28	15	34	144.2	153.1		
3	28	15	35	144.9	154.0	1084.1	601.9
3	28	15	36	146.1	155.5		
3	28	15	37	147.3	158.3		
3	28	15	38	148.7	159.0		
3	28	15	39	148.1	159.4		
3	28	15	40	150.4	161.6	1092.2	627.9
3	28	15	41	150.4	162.0		
3	28	15	42	152.8	164.4		
3	28	15	43	155.0	165.9		
3	28	15	44	156.3	167.0		
3	28	15	45	158.9	169.6	1079.2	616.8

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	28	15	46	162.2	173.1		
3	28	15	47	158.9	169.8		
3	28	15	48	162.0	172.9		
3	28	15	49	133.0	144.2		
3	28	15	50	100.6	108.4	1066.2	605.8
3	28	15	51	163.2	175.0		
3	28	15	52	163.8	174.8		
3	28	15	53	162.6	173.1		
3	28	15	54	164.4	174.6		
3	28	15	55	163.4	174.4	908.1	363.3
3	28	15	56	165.6	176.1		
3	28	15	57	165.8	176.1		
3	28	15	58	164.8	175.7		
3	28	15	59	165.4	176.1		
3	28	16	0	166.9	177.0	750.0	120.8
3	28	16	1	167.5	177.4		
3	28	16	2	167.7	177.8		
3	28	16	3	168.1	178.3		
3	28	16	4	168.9	179.6		
3	28	16	5	169.5	180.0	668.3	45.9
3	28	16	6	170.3	181.1		
3	28	16	7	169.7	180.9		
3	28	16	8	169.1	179.8		
3	28	16	9	167.1	178.7		
3	28	16	10	165.2	177.4	586.6	28.9
3	28	16	11	166.9	178.5		
3	28	16	12	168.5	180.4		
3	28	16	13	169.9	181.7		
3	28	16	14	169.3	179.8		
3	28	16	15	166.7	177.0	753.5	217.7
3	28	16	16	71.7	73.7		
3	28	16	17	175.2	184.3		
3	28	16	18	71.3	86.5		
3	28	16	19	52.6	57.3		
3	28	16	20	44.8	47.7	920.3	464.3
3	28	16	21	159.7	170.0		
3	28	16	22	153.4	162.7		
3	28	16	23	56.4	60.7		
3	28	16	24	122.2	122.3		
3	28	16	25	171.5	181.5	1050.3	541.3
3	28	16	26	173.8	182.8		
3	28	16	27	174.0	183.9		
3	28	16	28	180.5	190.9		

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	28	16	29	175.8	186.7		
3	28	16	30	168.3	178.9	1180.3	618.4
3	28	16	31	177.5	187.8		
3	28	16	32	163.0	170.9		
3	28	16	33	109.6	111.3		
3	28	16	34	165.4	175.5		
3	28	16	35	171.5	180.0	1167.2	548.8
3	28	16	36	178.5	188.3		
3	28	16	37	177.7	187.4		
3	28	16	38	177.5	187.2		
3	28	16	39	175.4	185.0		
3	28	16	40	175.0	184.1	1154.1	479.3
3	28	16	41	170.1	179.1		
3	28	16	42	170.7	179.1		
3	28	16	43	169.3	178.5		
3	28	16	44	35.0	38.0		
3	28	16	45	30.0	32.5	1053.5	372.2
3	28	16	46	26.5	28.6		
3	28	16	47	24.7	27.1		
3	28	16	48	23.2	25.8		
3	28	16	49	23.2	25.6		
3	28	16	50	22.8	25.2	952.9	265.2
3	28	16	51	21.2	23.4		
3	28	16	52	19.8	21.7		
3	28	16	53	17.9	20.0		
3	28	16	54	17.7	19.5		
3	28	16	55	17.1	19.1	940.9	248.2
3	28	16	56	17.1	19.1		
3	28	16	57	17.3	19.3		
3	28	16	58	17.5	19.1		
3	28	16	59	17.5	19.3		
3	28	17	0	17.7	19.7	929.0	231.3
3	28	17	1	18.7	20.8		
3	28	17	2	18.5	20.6		
3	28	17	3	17.7	20.0		
3	28	17	4	18.1	20.2		
3	28	17	5	19.0	21.0	1017.0	326.0
3	28	17	6	20.2	22.1		
3	28	17	7	21.0	23.2		
3	28	17	8	23.8	26.5		
3	28	17	9	81.5	85.0		
3	28	17	10	112.3	119.3	1104.9	420.7
3	28	17	11	155.7	165.0		

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	28	17	12	155.2	164.2		
3	28	17	13	153.6	162.2		
3	28	17	14	144.2	148.1		
3	28	17	15	142.6	150.3	1165.2	496.2
3	28	17	16	149.1	157.0		
3	28	17	17	148.9	157.0		
3	28	17	18	146.3	154.6		
3	28	17	19	148.9	157.5		
3	28	17	20	145.1	153.6	1225.4	571.8
3	28	17	21	153.0	162.0		
3	28	17	22	161.6	170.9		

Table 5: solar radiation data of STGWF case on sunny day

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	15	13	0	27.1	29.1	728.5	19.0
3	15	13	1	27.7	29.5		
3	15	13	2	28.7	30.6		
3	15	13	3	30.2	32.1		
3	15	13	4	31.0	33.0		
3	15	13	5	30.6	32.5	571.9	222.0
3	15	13	6	30.4	32.3		
3	15	13	7	41.4	42.3		
3	15	13	8	30.6	32.3		
3	15	13	9	28.9	30.6		
3	15	13	10	37.7	38.8	415.2	425.0
3	15	13	11	37.9	38.8		
3	15	13	12	37.1	38.4		
3	15	13	13	36.7	37.3		
3	15	13	14	37.3	38.0		
3	15	13	15	38.9	39.3	488.9	312.5
3	15	13	16	39.7	40.1		
3	15	13	17	40.1	40.6		
3	15	13	18	40.3	40.8		
3	15	13	19	40.8	41.2		
3	15	13	20	40.8	41.2	562.6	200.0

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	15	13	21	41.0	41.2		
3	15	13	22	39.9	40.1		
3	15	13	23	38.9	39.3		
3	15	13	24	38.5	38.8		
3	15	13	25	39.1	39.5	581.6	185.5
3	15	13	26	39.7	40.1		
3	15	13	27	39.9	40.3		
3	15	13	28	40.3	40.6		
3	15	13	29	40.3	40.6		
3	15	13	30	40.8	41.0	600.6	171.0
3	15	13	31	41.2	41.4		
3	15	13	32	41.4	41.6		
3	15	13	33	40.5	41.0		
3	15	13	34	37.5	39.0		
3	15	13	35	31.2	33.2	570.9	89.5
3	15	13	36	31.4	33.4		
3	15	13	37	32.6	34.5		
3	15	13	38	33.6	35.6		
3	15	13	39	34.4	36.4		
3	15	13	40	34.4	36.4	541.1	8.0
3	15	13	41	35.7	37.7		
3	15	13	42	34.0	36.2		
3	15	13	43	34.0	36.2		
3	15	13	44	34.2	36.0		
3	15	13	45	34.6	36.4	577.9	6.5
3	15	13	46	35.5	37.3		
3	15	13	47	35.9	37.5		
3	15	13	48	36.3	38.0		
3	15	13	49	36.9	38.4		
3	15	13	50	37.5	39.0	614.6	21.0
3	15	13	51	44.8	44.9		
3	15	13	52	46.7	46.6		
3	15	13	53	38.1	39.3		
3	15	13	54	41.4	42.1		
3	15	13	55	39.5	40.8	729.8	128.5
3	15	13	56	36.9	38.4		
3	15	13	57	35.7	37.3		
3	15	13	58	47.5	45.5		
3	15	13	59	49.1	47.7		
3	15	14	0	37.5	38.8	844.9	236.0
3	15	14	1	38.9	39.9		
3	15	14	2	35.5	37.1		

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	15	14	3	35.5	37.1		
3	15	14	4	36.3	38.2		
3	15	14	5	46.0	45.3	928.8	423.0
3	15	14	6	52.4	49.7		
3	15	14	7	52.6	49.5		
3	15	14	8	53.6	50.1		
3	15	14	9	55.2	51.0		
3	15	14	10	53.4	48.8	1012.6	610.0
3	15	14	11	35.5	36.9		
3	15	14	12	34.0	35.6		
3	15	14	13	33.6	35.1		
3	15	14	14	32.8	34.5		
3	15	14	15	32.4	34.1	868.0	493.0
3	15	14	16	33.0	34.7		
3	15	14	17	33.0	34.5		
3	15	14	18	32.8	34.3		
3	15	14	19	31.6	32.8		
3	15	14	20	28.5	29.9	723.4	376.0
3	15	14	21	24.7	26.2		
3	15	14	22	20.8	22.6		
3	15	14	23	18.7	20.6		
3	15	14	24	17.7	19.5		
3	15	14	25	17.3	19.1	611.4	135.0
3	15	14	26	16.5	18.0		
3	15	14	27	16.5	18.0		
3	15	14	28	17.7	19.3		
3	15	14	29	20.6	22.8		
3	15	14	30	22.2	24.3	499.3	106.0
3	15	14	31	23.0	24.9		
3	15	14	32	23.6	25.6		
3	15	14	33	23.8	25.6		
3	15	14	34	22.2	24.1		
3	15	14	35	21.0	22.8	745.8	267.5
3	15	14	36	19.6	20.8		
3	15	14	37	37.7	42.1		
3	15	14	38	19.2	19.3		
3	15	14	39	11.8	12.4		
3	15	14	40	10.6	11.1	992.2	641.0
3	15	14	41	10.2	10.6		
3	15	14	42	10.2	10.8		
3	15	14	43	10.8	11.3		
3	15	14	44	11.2	11.9		

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	15	14	45	11.4	12.1	1111.6	670.5
3	15	14	46	11.4	11.9		
3	15	14	47	11.4	11.9		
3	15	14	48	11.4	11.9		
3	15	14	49	11.0	11.3		
3	15	14	50	10.4	10.6	1231.0	700.0
3	15	14	51	9.8	9.8		
3	15	14	52	9.2	9.1		
3	15	14	53	9.2	9.3		
3	15	14	54	9.6	9.5		
3	15	14	55	10.0	10.2	1233.1	695.5
3	15	14	56	11.0	11.1		
3	15	14	57	12.0	12.1		
3	15	14	58	13.0	13.0		
3	15	14	59	14.1	14.1		
3	15	15	0	15.3	15.2	1235.1	691.0
3	15	15	1	16.5	16.7		
3	15	15	2	17.7	17.8		
3	15	15	3	19.6	19.3		
3	15	15	4	20.6	20.2		
3	15	15	5	20.0	19.7	1224.2	704.5
3	15	15	6	19.8	19.7		
3	15	15	7	20.6	20.8		
3	15	15	8	20.8	21.0		
3	15	15	9	21.4	21.7		
3	15	15	10	22.6	22.8	1213.2	718.0
3	15	15	11	25.5	25.8		
3	15	15	12	28.3	28.8		
3	15	15	13	35.5	35.8		
3	15	15	14	106.8	105.6		
3	15	15	15	43.8	45.1	1226.8	674.0
3	15	15	16	64.6	63.5		
3	15	15	17	117.4	110.0		
3	15	15	18	130.4	133.4		
3	15	15	19	139.8	134.9		
3	15	15	20	138.3	139.7	1240.3	630.0
3	15	15	21	133.7	138.2		
3	15	15	22	146.7	136.4		
3	15	15	23	125.5	137.7		
3	15	15	24	159.3	138.2		
3	15	15	25	149.1	136.0	1080.5	557.0
3	15	15	26	138.3	136.6		

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	15	15	27	143.8	138.4		
3	15	15	28	147.5	136.4		
3	15	15	29	153.2	136.4		
3	15	15	30	134.5	137.5	920.7	484.0
3	15	15	31	133.9	136.2		
3	15	15	32	125.5	135.8		
3	15	15	33	128.8	135.3		
3	15	15	34	122.0	135.3		
3	15	15	35	125.5	132.3	1075.8	615.0
3	15	15	36	132.0	129.7		
3	15	15	37	152.4	128.6		
3	15	15	38	133.7	133.8		
3	15	15	39	147.1	135.1		
3	15	15	40	134.7	135.6	1230.9	746.0
3	15	15	41	166.2	137.3		
3	15	15	42	141.2	141.4		
3	15	15	43	149.3	142.3		
3	15	15	44	132.8	143.6		
3	15	15	45	148.1	145.1	1195.4	727.0
3	15	15	46	151.0	146.6		
3	15	15	47	143.4	147.5		
3	15	15	48	152.2	148.8		
3	15	15	49	158.5	149.9		
3	15	15	50	155.0	147.7	1159.8	708.0
3	15	15	51	150.6	152.0		
3	15	15	52	134.5	154.2		
3	15	15	53	167.3	154.9		
3	15	15	54	153.2	153.6		
3	15	15	55	150.6	152.3	1172.4	699.0
3	15	15	56	146.3	154.2		
3	15	15	57	164.6	155.3		
3	15	15	58	158.5	158.8		
3	15	15	59	180.7	161.6		
3	15	16	0	152.8	163.3	1184.9	690.0
3	15	16	1	262.2	161.4		
3	15	16	2	132.8	158.3		
3	15	16	3	102.1	115.2		
3	15	16	4	57.7	59.4		
3	15	16	5	103.9	101.1	1208.5	745.0
3	15	16	6	135.9	151.8		
3	15	16	7	91.5	91.3		
3	15	16	8	152.6	162.7		

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	15	16	9	192.5	162.2		
3	15	16	10	54.2	54.7	1232.1	800.0
3	15	16	11	43.8	45.3		
3	15	16	12	50.1	52.3		
3	15	16	13	95.1	88.7		
3	15	16	14	131.4	122.3		
3	15	16	15	135.3	148.3	1151.6	791.5
3	15	16	16	139.2	155.1		
3	15	16	17	65.2	67.5		
3	15	16	18	49.3	51.4		
3	15	16	19	132.4	136.6		
3	15	16	20	71.7	72.7	1071.0	783.0
3	15	16	21	63.6	65.3		
3	15	16	22	66.6	68.8		
3	15	16	23	180.9	170.9		
3	15	16	24	105.3	111.0		
3	15	16	25	169.7	177.0	1040.1	746.5
3	15	16	26	184.4	175.7		
3	15	16	27	189.1	173.3		
3	15	16	28	100.9	110.8		
3	15	16	29	148.7	163.5		
3	15	16	30	78.0	85.2	1009.2	710.0
3	15	16	31	179.9	184.1		
3	15	16	32	177.7	180.7		
3	15	16	33	180.1	183.0		
3	15	16	34	168.5	182.0		
3	15	16	35	151.4	181.5	826.8	719.0
3	15	16	36	154.0	179.1		
3	15	16	37	165.2	176.8		
3	15	16	38	162.6	176.3		
3	15	16	39	171.5	177.6		
3	15	16	40	171.5	180.0	644.3	728.0
3	15	16	41	158.5	180.7		
3	15	16	42	215.3	181.3		
3	15	16	43	152.4	180.7		
3	15	16	44	176.8	178.3		
3	15	16	45	162.8	182.2	661.1	672.5
3	15	16	46	197.6	180.7		
3	15	16	47	178.9	180.4		
3	15	16	48	169.9	184.6		
3	15	16	49	216.6	184.1		
3	15	16	50	172.8	191.5	677.9	617.0

APPENDIX D: SAMPLES OF THE EXPERIMENTS' DATA

Month	Day	Hour	Minute	Solar radition 00	Solar radition 01	Ext-Rad-GLOBale W/m2 - Ave	Ext Rad-net W/m2 - ave
3	15	16	51	202.1	194.3		
3	15	16	52	200.1	196.1		
3	15	16	53	196.6	195.8		
3	15	16	54	249.2	197.8		
3	15	16	55	209.2	199.3	741.4	689.5
3	15	16	56	168.5	203.0		
3	15	16	57	168.5	209.1		
3	15	16	58	207.8	209.3		
3	15	16	59	222.9	215.4		
3	15	17	0	221.5	207.6	804.9	762.0
3	15	17	1	91.1	92.8		
3	15	17	2	144.5	167.6		
3	15	17	3	243.1	215.4		
3	15	17	4	210.9	212.8		
3	15	17	5	287.1	211.0	944.1	813.0
3	15	17	6	190.9	209.1		
3	15	17	7	222.7	207.1		
3	15	17	8	169.3	205.0		
3	15	17	9	162.0	185.9		
3	15	17	10	181.9	203.6	1083.2	864.0
3	15	17	11	163.8	199.1		
3	15	17	12	191.7	193.2		
3	15	17	13	252.8	192.8		
3	15	17	14	211.9	195.8		
3	15	17	15	165.6	198.9	1065.3	793.5
3	15	17	16	136.3	150.9		
3	15	17	17	191.1	186.5		
3	15	17	18	179.5	202.6		
3	15	17	19	190.9	206.3		
3	15	17	20	187.6	207.3	1047.3	723.0
3	15	17	21	221.5	207.6		
3	15	17	22	222.7	208.0		
3	15	17	23	206.8	209.5		

APPENDIX E: SAMPLES of DAILY EXPERIMENTS' PROGRESS REPORT

E. Progress report of the experiments

Table 1: Pilot study

Date	Start logging, hrs	Cabin GWF	Cabin Control	Notes and progress
6/2/2010	5am	Clear glass Normal	Clear glass Found the babuc shutting down. Fixed at 11 am	
7/2/2010	Carrying on	Clear glass. Babuc shutting –down. On again at 1pm during the starting of water running	Clear glass Normal ,Babuc2 and skye	
8/2/2010	Carrying on	Clear glass No comment, instrument working	Clear glass No comment. Instrument working	The SKYE disconnected, to offload the data,9-9.30am At 4.30pm found the water pump stopped. At that time weather start raining. water film run again at 5.30pm
9/2/2010 Downloaded the data	• Babuc start at 3pm. • Skye carrying on	Clear glass	Clear glass	9am Taken down the babuc to download and got problem with the one I borrowed it, needs to get the serial no for downloading. Starting logging at 3pm. At 6:30 found the water gone and also was raining.

Observing from pilot study: The indoor of the cabin very hot, found dryb39degc at 12.45pm, we need to insulate the doors of both. With pilot study found the water supply very slow so we need to add another bump to pump the water up and bring the timer for this bump to keep the water running on the glass during test

APPENDIX E: SAMPLES of DAILY EXPERIMENTS' PROGRESS REPORT

Table2: Experiments stages

Date	Start logging, hrs	Cabin GWF	Cabin Control	Notes and progress
10/2/2010 ideal reading	Set data logger after 2pm , for 2minuts. Was set water to shutdown at 7.30pm due to the solar shining expectation.	CGWF BABUC, SKYE PYRANOMETER CH00	CG ok	At 5pm found the water stopped it was filled just two hours back at 3pm. It was raining and stopped before 5, we refer to station. However at 5 the solar was shining on the facades it is perfect time for monitoring the response.
11/2/2010 Ideal reading Download the data from all of BABUC And SKYE	Water running at 1pm	CGWF BABUC, SKYE PYRANOMETER CH00	CG ok	The doors opened at 10:15am for insulation work, and done by 11:45am Solar shining water running with refilling every 1hr and half.
12/2/2010 Ideal reading	SKYE downloaded and start logging again at 10,am BABUC downloading. Started logging at 1pm.give 5days until 16th	CGWF BABUC, SKYE PYRANOMETER CH00	CG ok	Water started running at 1pm weather ok. Received the tinted glass and stored in cabin 1 Water was running all the time even during the rain time. and found the temp was same in both.

APPENDIX E: SAMPLES of DAILY EXPERIMENTS' PROGRESS REPORT

13/2/2010 **Saturday** Unreliable day	Unreliable day , GWC Clear glass only	CLEAR GLASS ONLY	At 7pm need to close the glass with insulation for Sunday data.	Need to Check the readings
CHANGE CASE-USING **ALUMINUM FOIL**				
14/2/2010	Pyranometer outdoor (code 01) /indoor	Neither water nor insulation	Close the glass with aluminum foil. Pyrano 01 west-outd	Investigating the insulation. It was ok
15/2/2010	This day (15feb) according to Zain-Ahmed2009 is the characteristic day of February. See p31 We measured the outdoor and indoor solar	Water start flushing at 1pm Babuc, pyrano00, and pyranom01 was outd	Close the glass with aluminum foil. Babuc,	At 9:30 morning found the indoor data in both cabins is close, with different only 3degc.surface, glob and drT. This indicates whither the insulation not enough or need ventilation. **At 2:30** found the water stopped.
Resuming the test with SCGWF 1.7m3/h				
16/2/2010	SKY found not logging for this day, it was stopped at 16th 10am due to the full memory, I relised this when I download on next day 17th feb BABUC were logging well.	Water-GWC at 1pm	Clear glass only	WATER flushing at 1pm. At 2:15 I opened the both doors for 2miuts, I found the dry-b droped by 2degc, it became 34degc.i did coz I want to remove the heat load from morning so I can get competition well

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17/2/2010 **Download data from all**	Downloading and logging again One pyranometer was attached to outdoor on the cabin, the other inside GWC cabin.	GWC	CLEAR GLASS	Early morning cloudy and some rain there. At **2.15** found the water off. Was not perfect sunny day, and it was raining late evening. At 6.30 after rain I checked found the cabin with water 1deg.C higher need to check the reading.
18/2/2010 **ideal reading**	At 9:30 put the pyranometer inside the reference cabin. loogg	Water start at 1pm babuc	Clear glass only Babuc, skye	9:40 still cloudy. Midday and after noon was clear sunny. Water was running.I found a good result. It was windy day and sunny. At 6:30-6 was raining
19/2/2010 **As it was not logging well in GWC cabin but it was good day for hourly data from 4-7pm**	Found BABUC off, start logging at 9:30am At 3:30 found babuc off again. Download data from all 3inst	GWC Found BABUC off, start logging at 9:30am **Ventilation from the door**	Ok. Clear glass only **Ventilation from the door**	After noon opened the door for ventilation to take out the overload heat, as the instrument would effect by high temperature. Weather was very sunny we need to check the pyranometer, BABUC in water cabin was having a problem to shutdown ,give message battery low.
21/2/2010	All instruments working .	GWC- clear glass with ventilation from the door as the photos	clear glass with ventilation from the door as the photos	It was very sunny day during the morning and evening until 3pm and then very windy, and no more sun shine. Should do another day.
22/2/2010 **ideal reading**	All ok,	GWC started at 12,15 midday	CLEAR GLASS	It was very perfect day, when I checked I found differences about 6C dry bulb at 5pm, need to check there were no wrong, or the efficient of water is during the sun shine only means to direct solar beam will see the data The water was running without any stopping.

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23/2/2010 ideal reading	BABUC1,2,SKY	GWW Started at 12 midday	CLEAR GLASS	SUNNY DAY. AT 6PM WAS HAVEY RAINING. And the water was running. I checked the reading after rain, found the GWC cabin temperature more than the reference. Because the water store the heat.
24/2/ 2010	Download data from SKY morning,	GWC start at 12midday	Clear glass	It was ok. On 1st of march I downloaded the data from sky found no data for this day due to the skye memory full then started deleting previous data
25/2/ 2010	Download the data from BABUC 9:30 and logging again before 10:30	GWC started at 10:30 morning	Clear glass	Found errors with BABUC in reference cabin morning, fixed about 11am. Sunny sometimes
26/2/ 2010	OK	GWC AT 11AM	CLEAR GLASS	Not sunny day ..som times sun shine…it was hot day to check any performance to defuse radiation. Cloudy day.
27/2/20 10	ok	No water , clear glass . To compare both without	Clear glss	Morning cloudy, afternoon sunny.. this day to get the different between the two cabins, if any differences with temperature. Was not perfect sunny day but ok for comparing both without water
CHANGE CASE-**WATER COMPOUND WITH DYE**				
28/2/2010	Use the tea with water as color. Instruments ok.	GWC-Use the tea with water as color	clear glass	Sunny day from morning to evening ..Water started at 1pm with tea color. Found the water spread well on glass sheets unlike the clean water.It was windy day ,,,and after 4pm started to be cloudy and sunny time to time. And the about 5p raning…after rain found the GWC higher with temperature.

APPENDIX E: SAMPLES of DAILY EXPERIMENTS' PROGRESS REPORT

MARCH 2010

CHANGE CASE: PROTOTYPE HAS CLEAR GLASS- NO WATER AND THE REFERENCE CABIN HAS TINTED GLASS				
Date	**Start logging, hrs**	**Cabin GWF**	**Cabin Control**	**Notes and progress**
1/3/2010 Monday	All instruments installed after downloading. Started about 12midday	CLEAR GLASS no water running	TINTED GRY GLASS	From morning was sunny day. It was found that the deference in temperature was less than the deference when using GWC this indicated to efficiency of GWC IT WAS RAINING AFTER 5PM
2/3/2010 Tuesday	All instruments working	CLEAR GLASS, NO WATER	TINTED GLASS	WAS CLOUDY DAY
3/3/2010 Wednesday Ideal	Instruments ok	CGWF Water started at 10 am as we have on the other cabin the tinted glass from early we need the water also for long time to compare.	Tinted glass	Before running the water, the temperature in both must be checked. Found different due to the tinted glass fixed for long time and the other just only clear glass. At 3pm found the difference good where the GWc better than tinted TE-D1.20, T—S13, BUT THE GLOP in tinted cell was better with 2.60c SUNNY DAY After 5.30 cloudy about to raining

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4/3/2010 **Not ok**	10,30 got problem with babuc in reference cell wasn't logging OLD babuc damaged	No water –clear glass install heat flux, and fixed on the glass after 7pm download the data	Tinted glass The contracter came to check the lakage in the cabins so we opened the doors about 3.15	At 10 to 10.15 check the reading to the both babauc. They were put in the reference cabin. It was sunny day-perfect we study the difference between clear glass and tinted glass with solar radiation by SKYE, as only on babuc working and can compare between outdoor and indoor in prototype cabin , compare clear glass without water and with water from oanother days to one reference that is outdoor.
5/3/2010	ok	Clear glass only	Tinted glass BABUC still damage	I left the site for personal things.
6/3/2010	At 8pm download the data from babuc 1 and skye, At 1am 7march babuc-new will start logging	Clear glass only	Tinted glass Pyranometer prop inside	Raining after 6.30
7/3/2010 SUNNY DAY	Babuc1, skye ok.	CGWF at 12 At 12:30 water temperature 30.40degC, clear glass from inside was 32.80degC. AT 3.45PM there was no sun shining but it was sunny day- WATER TEMP WAS 32.20, surface from inside was 33degC by laser, and 32.80 by babuc.	Tinted glass With pyranometer only. Found surface temp.40degC at same time using laser instr. Found surface 44degC, and confirm with measuring staircase glass that was 44.70degC.	To compare with outdoor temperature. And solar energy with indoor of tinted glass of reference. At 12:30 measured water temperature using laser prop, found 30.40degC And clear glass from inside was 32.80degC from laser and babuc same.

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8/3/2010 **Not ok..** **We can use an hour from the data**	Babuc1 and skye was working	CGWF started at 1.15pm, With **Tea** . stop befor 3pm as I found it at 3pm	TINTED GLASS ONLY Repair the floor of the cabin	Put more tea than before, about 1and half than before. 2/3 of BOH package tea. At 3pm found the water stoped. Contractor came to fix the floor in cabin 2 as it was damaged by rainwater Around 5 was raining . I took the pyranometer to inside the tinted cabin without locating it close to glass. For the pyranometer we can use it for the hours: tinted and CGWF-tea from 1to2.30befor thewater stopping; and outdoor with clear-glass indoor from 3pm to5pmraining time
CHANGE CASE WITH TINTED GLASS IN BOTH				
9/3/2010	Download 10am-Babuc 1 and log again with two surface temperature (6prototype and 7reference) Heat flux **Download dataSKYE-8pm**	TINTED GLASS ONLY	TINTED GLASS ONLY-surface temp=7	Changed the glass on prototype and return logging by 12miday ,,,SKYE was logging both in one room at 12 sent back to each room. Not very Sunny day particularly evening 8pm put the pyranometer of cell2 out door close to the cell 1 about 20cm away from the glass
10/3/2010	Babuc1 and sky **Pyranometer of reference installed outside vertically to west**	Tinted glass only, babuc1, pyranometer, heat flux	Tinted glass, surface temperature, no pyranometer installed outside vertically	Sunny day morning and afternoon. Found heat flux sensor not working , I sent to the company to repair

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TGWF MEDIUM RATE. IT SEEMS SAME AS HIGH RATE AFTER METER (WE CAN MAKE IT MEDIUM)				
11/3/2010 Sunny day and windy evening	Babuc 1 with2surface Sky with pyrano inside both	TGWF at 12midday	TG	Start water for cleaning about 11 for a few mints to clean and stop, at 12 start water film running. Morning sunny day Found water temperature at 12.15 31.20degC in both reservoir dawn and upper, at that time surface temp was 32.20 inside by leaser and 31.88 by babuc 1degC from water to ind sur. ..at 1:15 water tepm was 30.40 in tank and 31.20 on glass , inside was 32.20degC Was sunny day, stop water at 7pm
12/3/2010 Ideal day for sun shine until about 5.30	Babuc1 with2 surface temp. and without heat flux as it is still damaged ***Download data 8pm from both babuc1 and skye indoor all.Log again at 8pm***	TGWF	Tinted glass	IT IS A GOOD DAY until 5.30 then start raining At 5.05 found the water temp inside the tank 33degC and surface inside 35degC same with babuc
13/3/2010 Sunny day	BABUC 1 with two surface: surface 3 is for reference cabin, and surface 4 is for prototype cabin SKYE indoor all	TGWF AT 12 midday	Tinted glass	Start at 12pm, sunny day from morning. Water surface morning was 29degC where the surface was 37degC need to check reading. At 4pm found water temp 31degC. Shutdown water at 7.15pm
14/3/2010	Babuc1 with surface temp and SKYE all inside	TGWF at 11.50 , 10 minutes for cleaning	Tinted glass only	Very sunny day from morning until about 5pm or befor check reading.and strt raining
15/3/2010 Good day	Babuc1 and skye. Download data from babuc1	TGWF	TG	Sunny fro morning and evening was raining . After rain it was perfect time for sunny until 7.30. Start water before 12pm and stop water around 7.30

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16/3/2010 Good day Sunset late and no rain	Babuc1 and skye Download data from both babuc and skye	TGWF	TG	Water start at 11.50 am, and at the same time heat flux sensor showed error reading, it was ok recording with (-) maybe the sudden heat flow change make that problem. Off the water at 7.20pm
TINTED GLASS IN BOTH NO WATER FILM				
17/3/2010 Perfect sunny day	Babuc1 with tow surface HOPO air-temp inside reference cabin	TG ONLY	TG ONLY	Sunny day from morning and Hobo about 20 mint with babuc inside one cell
18/3/2010 Ok	Babuc1 with 2 surface :2in prototype, and 3in reference and skye. Pyranometer outside to west. Heat flux. **Download data from weather station**	TG ONLY Babuc and pyranometer	TG ONLY. No pyranometer	For surface in the cabin 2, the door was opened for mor than 1hour to download data from weather station
19/3/2010	Download data from babuc1 and skye. Babuc1 with 2 surface :2in prototype, and 3in reference, Pyranometer00 outside east, and pyran01out-west	TG ONLY	TG ONLY	SUNNY DAY morning and afternoon ,and some clouds
20/3/2010	Babuc and skye ok. Pyranometers oo to east and 10 to west. No solar data overwrite	TG only	TG	Saturday, I didn't come to faculty,
Change case: Low-rate of water flow				
21/3/2010 Shortest day	Pyranometer 00east and 01 west. Babuc tow surface No solar data found –overwrite	**TGWF** low rate started at 11.45 we can make the data at 12 by change the data manually when we analyze	TG only	From morning not very sunny , come and go. About 5pm heavy rain. Stop water about 7.20pm.
22/3/2010 Shortest day	Pyranometer out east and west same. I found solar data only from 4pm	**TGWF** low rate, at 12pm.	TG	Sunny day from morning Sunny and Cloudy after noon

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23/3/2010	Download from babuc at 11.45 and install at 12pm 1mint found the heat flux -35 and change after water to plus 8pm download data from sky I found it overwrote the 4days20 to 22	**TGWF** low rate At 12pm	TG	Sunny from early morning. Afternoon clouds and sun time to time. Pyranometer outdoor both ooeast and 01 west. raining When stoped watter film the heat flux +from in to out became more from 11 to 19wat this idecates that water should stop at night and during rain or after/ or need to cooldown the water to be 25c
24/3/2010 GOOD DAY for this case	Babauc and skye. Pyrnometer ooeast 01west. Two surface. AND HOBO still there	**TGWF low rate .** **At 12.59pm water meter was (00000230) at 2.59pm water meter was(00002610)**	TG Surface. hobo	Water= 2380 in tow hours, therefore 1190 in one hurs. =19.8per minute **At 12.59pm water meter was (00000230) at 2.59pm water meter was(00002610)** At 7.34pm stoped the water and the meter reading was **00007888**
Change case: High-rate of water flow				
25/3/2010 Very sunny day from morning Ideal sunny day	Babuc with two surface. Skye, hobo 8pm download data from babuc, SKYE AND HOBO	TGWF HIGHER RATE. AT 12PM **At 12:00 pm the meter was 00008100. At 6:30pm meter was 00019284**	TGWF	Open full tap but the water flow seemed like the midume rate due to the water meter. Then we can say we have two rates high all days befor low and 25th March. and low21st – 24th. Water surface temp found at 12pm 30degC surface 39degC.other cabin surface 40degC. At 3pm water temp insid tank 32degC surface inside babuc34degC ,leaser 33degC. At 4 pm still sunny day. At 4.33 start raining . **Closed water at 6:30 due** to the rain and found the heat flux without water is much better because the outdoor temp lower than water temp.

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26/3/2010 **IDIAL SUNNY DAY** **Need foucose on**	BABUC with 2surface ,SKYE,HOBO	TGWF higher rate started at 12pm Water meter 00019284 8pm moved pyranometer to inside	Surface, hobo temperature 8pm moved pyranometer to inside	At 12pm water temp was 29degC because the water stored on top cooling during night. Surface 37out, and 38degC in. At 5.20pm heat flux was (-+0.5), it was the peak of the solar were the reference surface was 50somthing degC. And the prototype from babuc was 38degC Therefore this **is limitation** of the study were we need to cool the water to keep it lower that outdoor or same.(need to approve that lower than out or same would be ok). This high temp of water not because of the water film it's from the sources of water the faculty tank not shaded Heavy rain after 6.40
27/3/2010	Babuc with two surf, SKY,HOBO	TGWF at 12.15pm high rate Water meter was Surface no3 At 7.05 shut down the water. Meter was 00043240	Pyranometer, surface no2	At 12.15 water temp was 28degC. And water inside the reservoir downst was 30degC while the water inside the FAB tank 35degC.at 1pm water will refill from the 30degC, and 2pm water will refill from the FAB tank with high temp, so at 1.30 I have to add some ice to cool the water down before pumping At 2.30 found water temp 33degC inside the down reservoir, and 39 inside FAB tank see photos, while the water running temp was 35degC HEAT FLUX +4. AT 5PM found water inside down reservoir 31degC, and water up inside 33degC.babuc 34degC, flux-13 and then -5…, At 7.05 inside up30C, THEN shut d the water, , the heat flux became more to out+ 34 to +43 and the glass surface became less check data babuc but the other cabin surface still more than 40C. this means we need to specify the time to shut d the water due to the outdoor temp see outdoor temp with water and without
28/3/2010 **Sunday** **Ideal sunny day**	BABUC 2surface reference, 3surface prototype. HOBO, SKY 8PM downloaded data from BABUC and SKYE.	**TG only** , pyranometer 00	TG only, Pyranometer 01. HOBO	I was home , came 8PM to download data from BABUC and SKYE

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29/3/2010 Not very sunny day	BABUC,SKYE,HOBO Inside all	TGWF with cooling water every 1 hour by adding ice to water with measuring temperature by leaser	TG Pyranom, hobo, surface	At 12 water temp was 30degC, at 1.50 water temp was 32degC I added ice to water at this time to upper reservoir and at 2.35 water temp was 30degC, (this time water down was 32dgC, and FAB tank water was 37dgC). At 3pm water tepm 31degC, surface inside 33C. at 4pm water was 28degC and surface was 29C.
30/3/2010 Fully cloudy day	Babuc1,sky,hobo were logging	TGWF only a few hours. Shut down due to the weather	TG	Cloudy day and raining. I started the high rate of water for 2 hours and off it due to the weather
31/3/2010 Clouds and sunny	Pyranometer 01 west out ,and 00inside cabin 1	HIGH RATE TGWF	TG WITHOUT PYRANOMETER	It was fully cloud morning and then sunny with clouds

APRIL 2010

CHANGE CASE: prototype has clear glass- no water and the reference cabin has tinted glass				
Date	**Instruments logging, hrs**	**Cabin GWF**	**Cabin Reference**	**Notes and progress**
1/4/2010	Babuc,SKYE,HOBO	Babuc + HOBO+pyrano00 HOBO 11.30 to 11.55pm next day	Surface	At 11.30 put the HOBO beside the BABUC SEE PICS inside cabin1 for controlling for one day This day no water running due to the weather. I went to physic department and conducted the water test to IR
2/4/2010		SKYE00 INSID Skye 01 out west	SKYE HOBO	No progress with water. At 11.55 sent back the HOBO to cabin 2

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3/4	BABUC,HOBO	SKYE00 INSID Skye 01 out west	SKYE HOBO	Reference for TG
4/4	NO BABUC DUE TO THE FULL MEMORY	SKYE00 INSID Skye 01 out west	SKYE HOBO	Reference for TG
5/4 **Good day** **Deem to be mid rate**	Babuc , SKYE 00inside cabin1, and 01 outdoor to west	TGWF start at 12.30pm high rate. to be after 5 as mid due to the lake of water **Babuc download** at 11.30am , 2sur refer, and 3ref proto	TG SKYE HOBO	It was very suny day from morning , About 5pm start raining and then about 5.30 very sunny Water was high rate so the water not enough cased stopping of WF. This day perfect for comparing outdoor and indoor due to the expectation of low out temperature after rain, therefore the surface and water might be high than outdoor ,water temp was 33at 6pm Water stopped many times need to check the readings
6/4 **VERY SUNNY DAY**	BABUC, HOBO,SKYE	TG	TG	Pyranometer00 east, and 01west. Contractor came to install misting system. And said will come on 9/4 to fix the pump
7/4	BABUC,HOBO,SKY	TG	TG	Sunny day from early morning